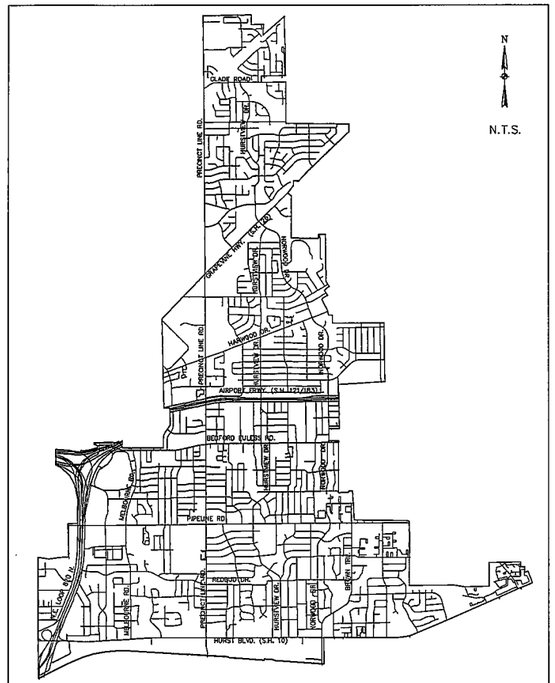
"A Quality of Life City"

PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION

CITY MAP



SPECIAL NOTE:
IN ORDER TO PROVIDE THE MOST CURRENT CITY STANDARD DETAILS TO THE CONSTRUCTION AND DESIGN INDUSTRY STANDARD DETAILS CAN BE DOWNLOADED FOR FREE FORM THE CITY OF HURST WEBSITE www.hursttx.gov OR THEY MUST BE PURCHASED FROM THE CITY OF HURST PUBLIC WORKS DEPARTMENT – ENGINEERING DIVISION AT 1505 PRECINCT LINE ROAD, HURST, TEXAS 76054, (817) 788–7076.

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE CITY OF HURST TO VERIFY THEY HAVE THE LATEST VERSION OF THE STANDARD DETAILS BEFORE THEY BEGIN WORK.

STANDARD DETAILS

REVISED DATE: AUGUST 2014

MAYOR
RICHARD WARD

CITY COUNCIL
ANNA HOLZER LARRY KITCHENS BILL McLENDON
DAVID BOOE NANCY WELTON HENRY WILSON

CITY MANAGER
ALLAN WEEGAR

PUBLIC WORKS DIRECTOR
RON HAYNES, P.E.

CITY ENGINEER
GREG DICKENS, P.E., CFM

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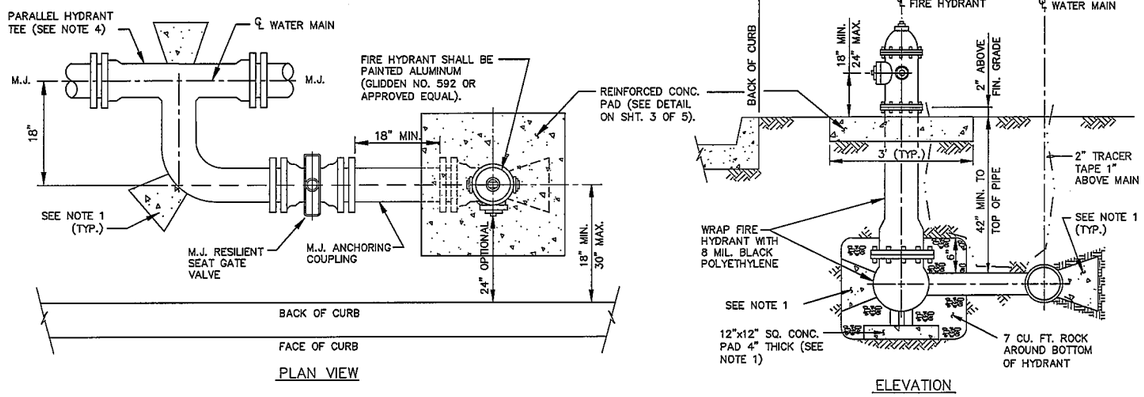
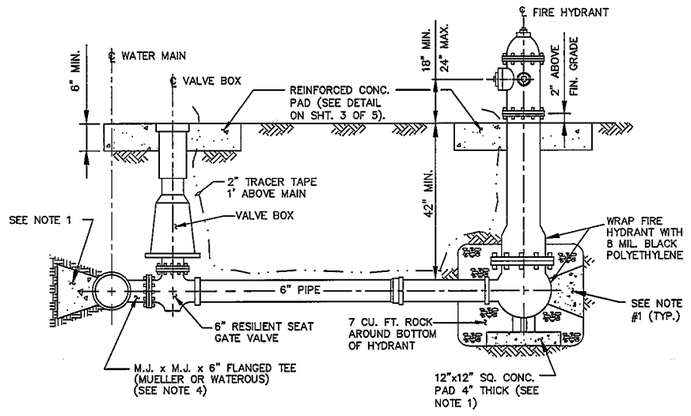
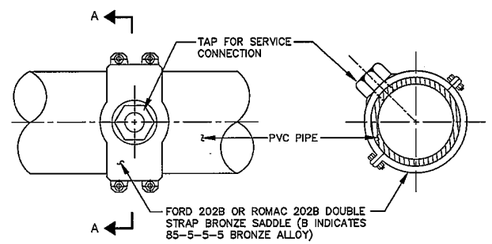


STANDARD FIRE HYDRANT TEE INSTALLATION

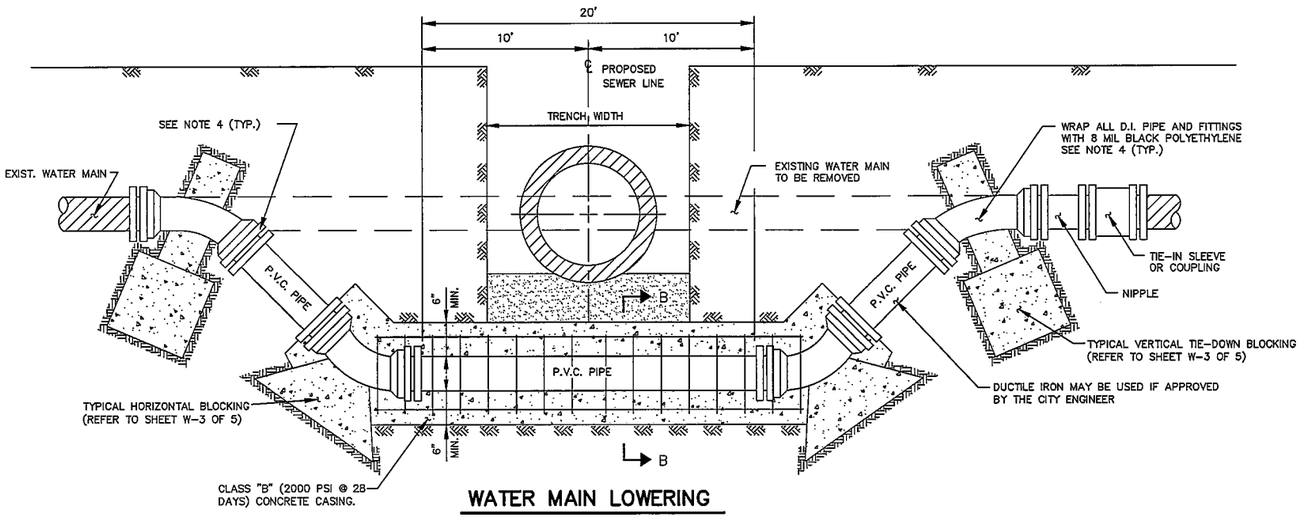


SPECIAL FIRE HYDRANT INSTALLATION



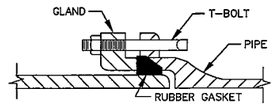
TYPICAL SERVICE CONNECTION FOR 1" OR SMALLER WATER TAPS

(FOR SERVICE TAPS LARGER THAN 1" SEE DETAIL ON SHT. 3 OF 5)

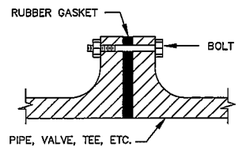


WATER MAIN LOWERING

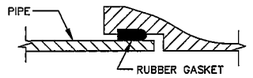
NOTE:
ALL BOLTS SHALL BE COR-TEN BOLTS AND SHALL MEET REQUIREMENTS OF A.N.S.I. SPECIFICATIONS B16.1.



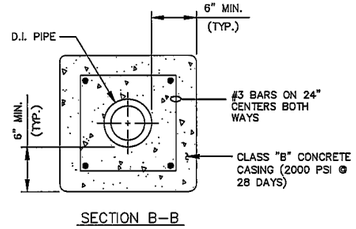
MECHANICAL JOINT



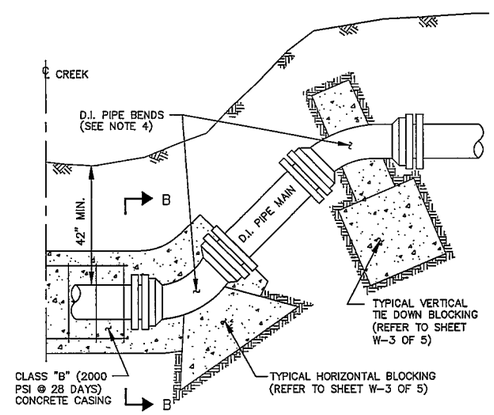
FLANGED CONNECTIONS



TYTON JOINT

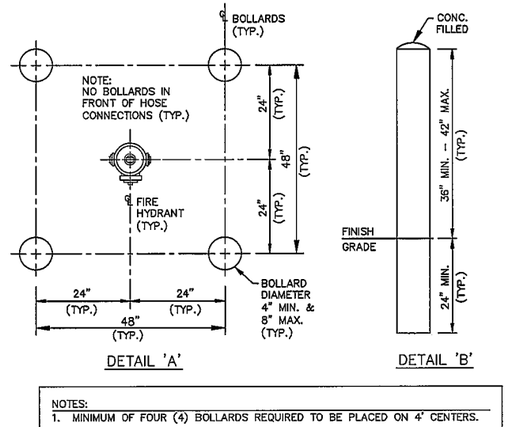


CONCRETE ENCASEMENT FOR WATER MAIN LOWER



HALF-SECTION TYPICAL CREEK CROSSING

GENERAL NOTES:
1. CLASS "B" (2000 PSI @ 28 DAYS) CONCRETE QUANTITIES AT EACH LOCATION AS DESIGNATED ON THE DRAWINGS OR AS DETERMINED FROM BLOCKING DETAILS AND TABLES ON SHEET W-3 OF 5.
2. SEE SHEET 2 OF 5 STANDARD NOTE 4 FOR APPROVED FIRE HYDRANT TYPES AND ADDITIONAL SPECIFICATIONS. TRENCH SAFETY PLAN.
3. FIRE HYDRANT SHALL BE PAINTED ALUMINUM (GLIDDEN NO. 592) OR APPROVED EQUAL.
4. ALL BENDS AND TEES REQUIRE A MEGA-LUG STYLE LOCKING GLAND.
5. WHEN THE TRENCH OR EXCAVATION EXCEEDS 5 FEET IN DEPTH, THE CONTRACTOR SHALL MEET OR EXCEED THE O.S.H.A. STANDARD PLAN FOR TRENCH SAFETY.



NOTES:
1. MINIMUM OF FOUR (4) BOLLARDS REQUIRED TO BE PLACED ON 4' CENTERS.
2. NO BOLLARDS DIRECTLY IN FRONT OF HOSE CONNECTION.
3. TOP OF BOLLARDS EQUAL WITH EACH OTHER (36" MIN. TO 42" MAX. HEIGHT). MINIMUM DEPTH BELOW THE FINISH GRADE WILL BE 24".
4. PIPE DIAMETER WILL BE 4" MIN. AND 8" MAX.
5. BOLLARDS TO BE CONCRETE FILLED AND PAINTED YELLOW.

FIRE HYDRANT BOLLARD REQUIREMENTS

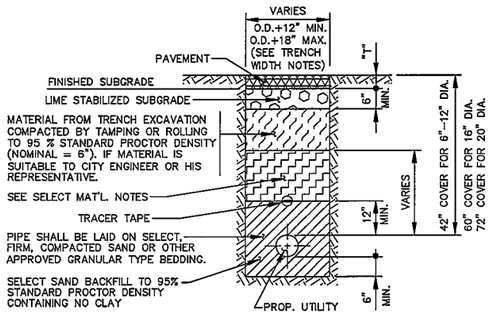
WATER LINE DETAILS

SMALL SERVICE TAP, HYDRANT AND ENCASEMENT

PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
1505 PRECINCT LINE ROAD
HURST, TEXAS 76054
817-788-7076

DESIGN	DRAWN	CHECKED	DATE	SCALE	REVISED	SHEET NO.
C.O.H.	R.O.	C.F.D.	JAN. 1998	N.T.S.	AUG. 2014	STD. DEETS W-1 OF 5

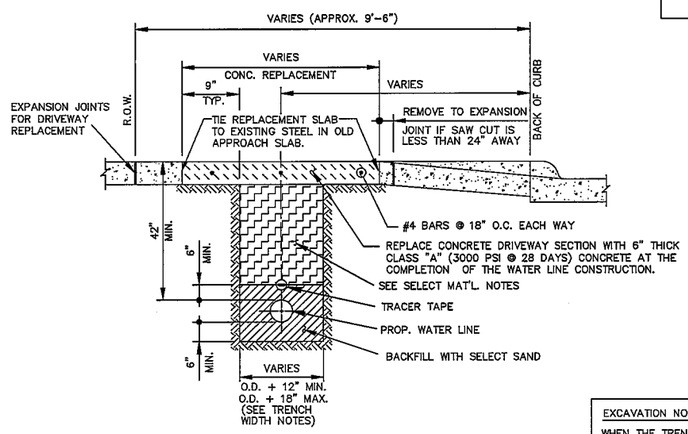
X:\PUBWKS\ENGINEERING\12_CAD\ENGR\ACAD_SETUP\STD_DETAILS\REVISED\2014_AUGUST\WATER\W-1_of_5.DWG



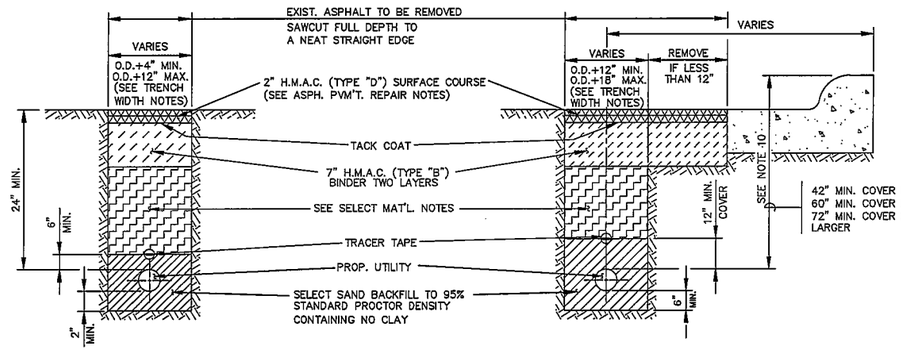
NOTES:
1. THERE WILL BE NO OPEN CUTTING OF EXISTING PAVEMENT AND/OR CURB AND GUTTER THAT IS TO REMAIN IN PLACE WITHOUT THE PERMISSION OF THE CITY ENGINEER.
2. ACCESS TO ALL STREETS AND DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND/OR REPAIRS.

EMBEDMENT AND BACKFILL UNDER PROPOSED STREET

(STREET LIMITS PLUS 2 FT. BEYOND BACK OF CURB)



WATER LINE UNDER DRIVEWAY APPROACH

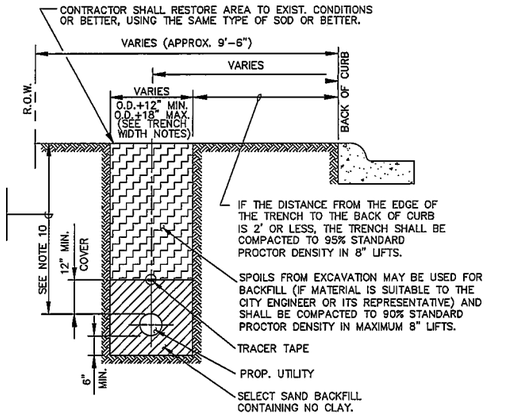


NOTES:
1. THE PRIMARY COLLECTOR AND ARTERIAL STREETS REQUIRE A 2" H.M.A.C. (TYPE "D") SURFACE COURSE AND A 7" H.M.A.C. (TYPE "B") BINDER COURSE IN TWO LAYERS.
2. ALL ASPHALT TO BE COMPACTED TO A MINIMUM OF 95% STANDARD LABORATORY DENSITY.
3. PAVEMENT REPAIR ON CONCRETE STREETS REQUIRE THAT THE TYPICAL SECTION TO BE APPROVED BY THE CITY ENGINEER.
4. THERE WILL BE NO OPEN CUTTING OF EXISTING PAVEMENT AND/OR CURB AND GUTTER FOR SERVICE LINES OR ANY OTHER PURPOSE WITHOUT THE EXPRESSED PERMISSION OF THE CITY ENGINEER.
5. ACCESS TO ALL STREETS AND DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND/OR REPAIRS.

STREET REPAIR SECTION FOR WATER UTILITY SERVICE

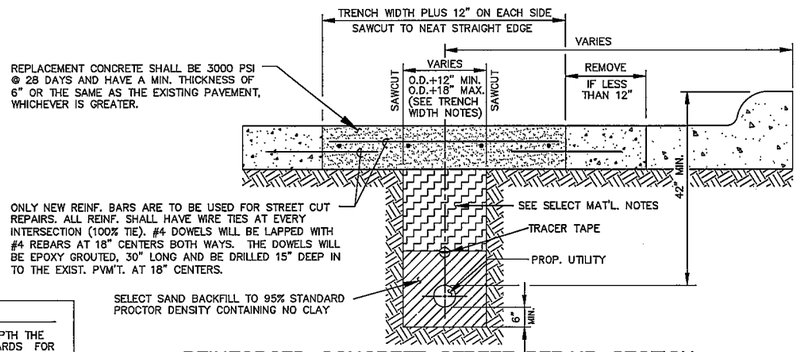
STREET REPAIR SECTION FOR 6" DIA. UTILITIES OR LARGER

SELECT MATERIALS NOTES:
1. SELECT MATERIAL SHALL BE IN 8" LIFTS (MAX.), COMPACTED TO 95% STANDARD PROCTOR DENSITY BY TAMPING.
2. IF SELECT GRAVEL OR SAND BACKFILL IS USED, THE LIFT THICKNESS MAY BE INCREASED TO 15" (MAX.) AND COMPACTED BY VIBRATOR TAMPING.
3. THE EXCAVATED MATERIAL MAY BE USED AS "SELECT BACKFILL" ONLY UPON APPROVAL OF THE CITY.
4. THE CITY MAY REQUIRE SOILS COMPACTION TEST, EVERY OTHER LIFT AND EVERY 200 L.F. THE EXPENSE IS TO BE BORNE BY CONTRACTOR OR UTILITY COMPANY.

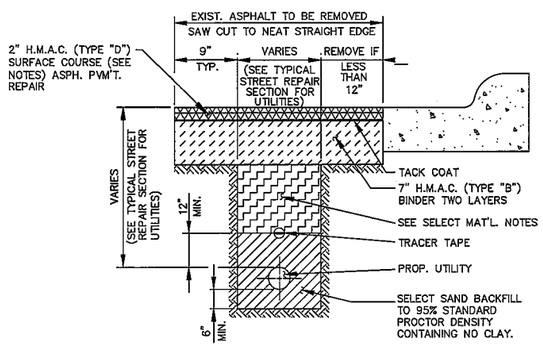


NOTES:
1. WIDTH OF TRENCH AT TOP OF PIPE SHALL NOT EXCEED O.D. OF PIPE PLUS 24".
2. IF TRENCH BOTTOM IS UNSTABLE, CRUSHED STONE (NCTCOG AGGREGATE GRADE 4) COMPACTED TO 90% STANDARD PROCTOR DENSITY TO VARIABLE DEPTH, MAY BE REQUIRED BY CITY ENGINEER OR HIS REPRESENTATIVE TO REPLACE SOFT, SPONGY OR OTHERWISE UNSUITABLE MATERIAL.

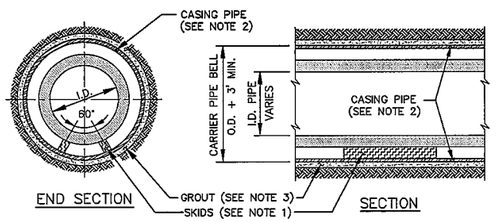
DITCH LINE BEHIND CURB



REINFORCED CONCRETE STREET REPAIR SECTION



SPECIAL BENCH STREET REPAIR SECTION FOR UTILITIES



NOTES:
1. FURNISH AND INSTALL THE APPROPRIATE SIZE HIGH DENSITY POLYETHYLENE (HDPE) CASING SPACERS, LIKE "RACI" TYPE HDPES SPACERS OR AN APPROVED EQUIVALENT, ON 5' C-C UNLESS OTHERWISE SHOWN.
2. TYPICAL CASING SHALL BE:
   A. STEEL CASING CULVERT PIPE OR SPLIT CASING.
   B. REINFORCED CONCRETE CULVERT PIPE.
   C. STEEL PIPE MINIMUM RATING DR 48.
3. FURNISH AND INSTALL GROUT IN RATIO OF 1 CU. FT. OF CEMENT AND 3.5 CU. FT. OF CLEAN FINE SAND WITH SUFFICIENT WATER ADDED TO PROVIDE A FLOWING THICK SLURRY.

STEEL CASING SECTION

EXCAVATION NOTE:

WHEN THE TRENCH OR EXCAVATION EXCEEDS 5 FEET IN DEPTH THE CONTRACTOR SHALL MEET OR EXCEED THE O.S.H.A. STANDARDS FOR TRENCH SAFETY.

GENERAL NOTES FOR WATER LINE:

1. WATER LINES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT CITY OF HURST ORDINANCES, SPECIFICATIONS AND CODES.
2. WATER LINES SHALL BE A MINIMUM DR 18 (CLASS 150) PVC MEETING THE LATEST AWWA C900 STANDARDS OR PIPE SHALL BE SPECIFIED ON PLANS WITH FACTORY INSTALLED GASKETS.
3. ALL GATE VALVES SHALL BE RESILIENT WEDGE DESIGN COMPACT BODY, EPOXY COATED INTERIOR AND EXTERIOR, NON-RISING STEM WITH M.J. ENDS, WHICH CONFORMS TO LATEST APPLICABLE AWWA C509 STANDARDS. ALL VALVES SHALL BE EQUIPPED WITH A 2" SQUARE OPERATING NUT AND OPEN COUNTERCLOCKWISE. FOR EACH VALVE INSTALLED THE CONTRACTOR SHALL FURNISH AND INSTALL A THREE PIECE, CAST-IRON SOIL PIPE, SCREW TYPE, ADJUSTABLE VALVE BOX (PVC RISERS ARE NOT ALLOWED).

   THE FOLLOWING IS A LIST OF CITY OF HURST APPROVED RESILIENT SEATED GATE VALVE AND TAPPING VALVE MANUFACTURERS:
   A. MUELLER MODEL A-2360
   B. AMERICAN FLOW CONTROL 500 SERIES
   C. M&H 4067
4. ALL FIRE HYDRANTS SHALL BE STANDARD TRAFFIC MODEL WITH A THREE-WAY, DRY-BARREL 5 1/4" MAIN VALVE OPENING AND SHALL CONFORM TO THE LATEST AWWA C502 STANDARD WITH ONE EACH OF 4 1/2" STEAMER NOZZLE NATIONAL STANDARD THREAD, OPERATING NUT NATIONAL STANDARD 1 1/2" P TO F, OPEN LEFT C-C; TWO EACH OF 2 1/2" HOSE NOZZLES NST, GREASE LUBRICATED; AND THREE EACH OF NOZZLE CAPS AND CHAINS.

   THE STANDARD DEPTH OF BURY OF THE FIRE HYDRANT SHALL BE 42", BUT THE HYDRANT BODY LENGTH SHALL BE SUFFICIENT FOR THE DEPTH OF BURY AT THE PARTICULAR LOCATION IN WHICH IT IS INSTALLED. THE CENTER OF THE PUMPER NOZZLE IS AT LEAST 18" TO 24" ABOVE THE FINISHED CURB ADJACENT TO THE HYDRANT OR ABOVE THE FINISHED GRADE. THE BREAK FLANGE SHALL BE NO HIGHER THAN 6" ABOVE NATURAL GROUND.

   FIRE HYDRANTS SHALL BE SHIPPED FROM THE FACTORY WITH TWO COATS OF FLAT RED PRIMER AND PAINTED BEFORE OR AFTER INSTALLATION WITH TWO COATS OF ALUMINUM COLOR PAINT (GLIDDEN-SERIES 592, ALUMINUM OR APPROVED EQUAL).

   THE FOLLOWING IS A LIST OF CITY OF HURST APPROVED FIRE HYDRANTS:
   A. MUELLER SUPER CENTURION 250 A-423
   B. M&H 129
   C. WATEROUS PACER WB 67DDP
   D. AMERICAN DARLING MODEL B-84-B
5. ALL WATER SERVICES SHALL BE 1" MINIMUM TYPE "K" (SOFT) COPPER AND SHALL BE LOCATED AT THE CENTERLINE OF EACH LOT AND STAMPED INTO FRESH CONCRETE OR MARKED WITH A "W" NEATLY SAWCUT INTO THE CURB.
6. ALL 1" WATER SERVICES SHALL BE MADE BY USING A DOUBLE STRAP BRONZE SADDLE (FORD 202B OR APPROVED EQUAL), 1 1/2" AND 2" SERVICE LINE CONNECTIONS SHALL BE MADE USING JCM 418 TAPPING SLEEVE (OR APPROVED EQUAL) ALONG WITH A 2" GATE VALVE THEN REDUCED. A 2" TO 1 1/2" REDUCER WILL BE REQUIRED FOR 1 1/2" INSTALLATION (SEE DETAIL). ALL SERVICES LARGER THAN 2" SHALL BE MADE WITH THE SAME SIZE TAPPING SLEEVE AND VALVE. TEFLON COATED AND STAINLESS SADDLE WILL NOT BE ALLOWED.
7. ALL 1 1/2" AND 2" WATER SERVICES SHALL INCLUDE A 2" CAST IRON GATE VALVE WITH A 2" SQUARE OPERATING NUT AND A VALVE BOX, LID AND COVER. ALL SERVICES LARGER THAN 2" SHALL INCLUDE GATE VALVES THE SAME SIZE AS THE SERVICE LINE.
8. WATER SERVICES SMALLER THAN TWO (2") INCHES SHALL TERMINATE IN A POLYETHYLENE METER BOX (LABEL READING "WATER METER") AND BE LOCATED 2' TO 3' BEHIND THE CURB AT GRADE. EVERY EFFORT MUST BE MADE TO LOCATE THE METER BOXES IN GRASS AREAS. METER BOX SHALL NOT BE LOCATED IN DRIVEWAYS OR PARKING LOTS.
9. ALL IRON PIPE, BRONZE SADDLES, FITTINGS AND VALVES SHALL BE WRAPPED IN 8 MIL POLYETHYLENE.
10. MINIMUM COVER FOR WATER PIPE IS 42" BELOW TOP OF CURB OR GRADE, WHICHEVER IS LOWER. THE ACTUAL COVER REQUIRED FOR WATER LINES DEPENDS ON THE DIA. OF THE PIPE BEING INSTALLED: 42" COVER REQUIRED ON ALL 6"-12" PIPE, 60" COVER REQUIRED FOR ALL 16" DIA. PIPE AND 72" COVER REQUIRED FOR ALL 20" OR LARGER DIA. PIPE.
11. ALL WATER LINES SHALL BE DISINFECTED AND SHALL HOLD 150 PSI FOR FOUR-HOURS WITH MINIMAL PRESSURE LOSS (SEE WATER LOSS TABLE IN SPECIFICATIONS) PRIOR TO PLACING INTO SERVICE. IF A SERVICE CONNECTION IS NOT AVAILABLE NEAR THE END OF THE LINE BEING CONSTRUCTED, A 1" TAP AND COPPER LINE MUST BE INSTALLED FOR DISINFECTING, TESTING AND BLOWING OUT OF LINE.
12. DETECTABLE TRACER (TERRA TAPE OR APPROVED EQUAL) SHALL BE LAID WITH PVC PIPE CONNECTED TO ALL FITTINGS. TAPE SHALL BE LAID 6" ABOVE THE TOP OF THE PIPE IN A LEVEL UNIFORM MANNER IN THE BACKFILL MATERIAL OR ON TOP OF SAND BACKFILL.
13. MINIMUM CLEARANCE BETWEEN NEW WATER AND SEWER LINES SHALL BE 9' EXCEPT WHERE NOTED ON THE PLANS. ANY AND ALL EXCEPTIONS SHALL BE CONSTRUCTED ACCORDING TO TEXAS DEPARTMENT OF HEALTH CRITERIA.
14. ALL DITCH LINES NOT UNDER STREETS AND NOT CLOSER THAN 2' OF THE BACK OF CURB SHALL BE COMPACTED TO 90% STANDARD PROCTOR DENSITY BY TAMPING (WATER JETTING WILL NOT BE ALLOWED). DITCH LINES UNDER STREETS AND WITHIN 2' OF THE BACK OF CURB SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY BY TAMPING IN 8" LIFTS (WATER JETTING WILL NOT BE ALLOWED). OPTIMUM TO PLUS 4% MOISTURE IS REQUIRED.
15. ALL WATER VALVES LOCATIONS SHALL BE PAINTED BLUE ADJACENT TO ITS LOCATION AND MARKED WITH A "V" ON THE CURB. THE "V" SHALL BE SAWCUT OR STAMPED IN CURB NO CHISELING WILL BE ALLOWED.
16. ALL BENDS AND TEES REQUIRE A MEGA-LUG STYLE LOCKING GLAND.
17. CLASS "B" (2000 PSI @ 28 DAYS) CONCRETE QUANTITIES AT EACH LOCATION AS DESIGNATED ON THE DRAWINGS OR AS DETERMINED FROM THE BLOCKING DETAILS AND TABLES.
18. WHEN THE TRENCH OR EXCAVATION EXCEEDS 5' IN DEPTH, THE CONTRACTOR SHALL MEET OR EXCEED THE O.S.H.A. STANDARDS FOR TRENCH SAFETY PLAN.
19. REFLECTIVE BLUE FIRE HYDRANT SPOTTERS SHALL BE INSTALLED AT ALL STREETS AT A POINT OPPOSITE FIRE HYDRANTS AND LOCATED ALONG THE CENTER LINE OF STREET, CLOSEST TO HYDRANT. WHEN HYDRANTS ARE LOCATED AT INTERSECTING CORNERS, BLUE SPOTTERS SHALL BE PLACED ON BOTH STREETS.
20. ALL WATER METERS AND ASSOCIATED PARTS MUST BE 100% WATERWORKS BRASS.
21. ALL CONNECTIONS AND ADAPTORS ARE TO BE NON SHEAR.
22. ALL SERVICE SADDLES MUST BE 100% WATER WORKS BRONZE WITH DOUBLE STRAP TAPPING SADDLE. PREFERRED MANUFACTURERS ARE FORD, MUELLER, OR MCDONALD.
23. ALL CLAMPS MUST BE STAINLESS STEEL AND SINGLE BAND. PREFERRED MODELS ARE SMITH-BLAIR 281 OR FORD FS1.
24. ALL COUPLING MUST BE BOLTED STEEL. PREFERRED BRANDS ARE SMITH-BLAIR, FORD, JCM, OR APPROVED EQUAL.
25. ALL SLEEVES MUST BE A DOMESTICALLY MANUFACTURED DUCTILE IRON AND COME WITH ALL ACCESSORIES.
26. THE FOLLOWING ITEMS MUST BE 100% WATER WORKS BRASS: ADAPTERS, ALL THREAD NIPPLES, ANGLE STOPS, BUSHINGS, CAPS, COMPRESSION FITTINGS, CURB STOPS, ELLS, METER FLANGES, METER RE-SETTERS, METER SETTERS, METER SPUDS, METER YOKES, NIPPLES, PLUGS, REDUCERS, SINGLE CHECK VALVES, AND TEES.
27. THE FOLLOWING ITEMS MUST BE DOMESTICALLY MANUFACTURED CAST IRON: VALVE BOX BOTTOM, VALVE BOX EXTENSION, VALVE BOX LID, AND VALVE BOX TOP.
28. ALL PIPE FITTINGS SHALL BE DUCTILE IRON TYPE OF IRON IN ACCORDANCE WITH ANSI/AWWA C110/A21.10-03.
29. ALL EXPENSE FOR TESTING TO BE BORNE BY THE CONTRACTOR.

WATER LINE DETAILS

STREET REPAIR AND EMBEDMENT

PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
1505 PRECINCT LINE ROAD
HURST, TEXAS 76054
817-788-7076

DESIGN	DRAWN	CHECKED	DATE	SCALE	REVISED	SHEET NO.
C.O.H.	R.O.	A.J.	JAN. 1998	N.T.S.	AUG. 2014	STD. DEETS W-2 OF 5

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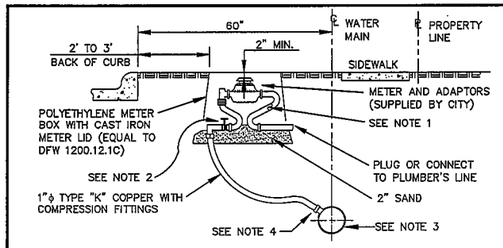
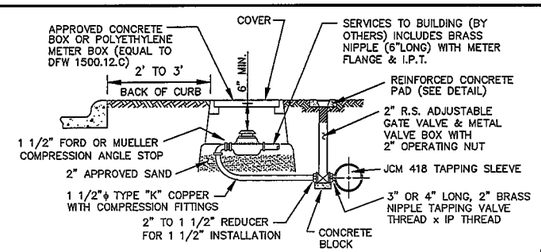


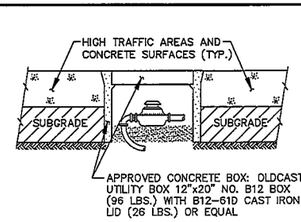
NOTES:
1. MUELLER H-1404, (7" HEIGHT FOR 5/8" METER AND 10" HEIGHT FOR 1" METER) WITH H-14222 END CONNECTIONS OR FORD V 74-10-11-44 METER SETTER OR AY MCDONALD 20-210WX04.
2. MUELLER H-1503-1, FORD BH 41-344WRG OR AY MCDONALD 6112-22 CURB STOPS WITH COMPRESSION FITTINGS.
3. FORD 202B-962, MUELLER BR2B0899 OR AY MCDONALD 3825 DOUBLE STRAP BRONZE SADDLE (85-5-5-5 BRONZE ALLOY)
4. MUELLER H-15008 OR FORD F10004G OR AY MCDONALD 47-4Q CORPORATION STOP AT 45° ON MAIN

TAP FOR 3/4" OR 1" SERVICE METER SET

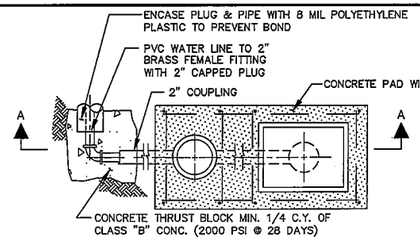


1 1/2"-2" SERVICE METER SET

(1 1/2" SERVICE REQUIRES 2" TAP AND VALVE)

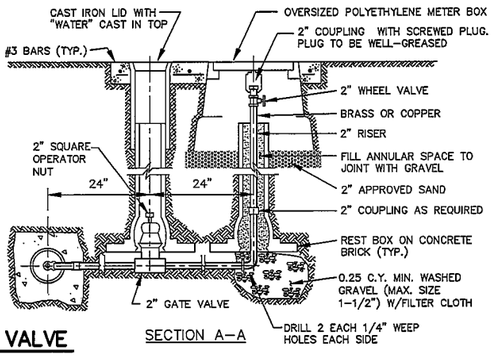


CONCRETE METER BOXES REQUIRED FOR HIGH TRAFFIC AREAS OR CONCRETE PAVEMENT SURFACES



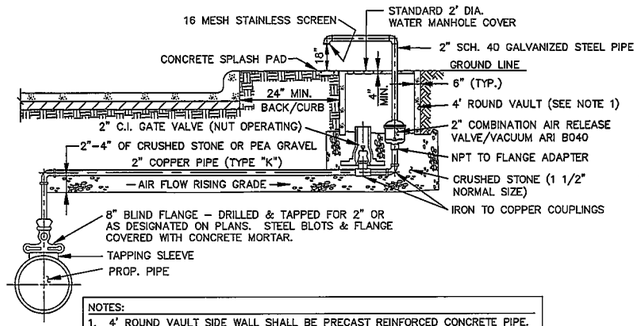
PLAN

NOTES:
1. ALL FITTINGS SHALL BE THREADED, FLANGED OR COMPRESSION JOINT BRASS.
2. ALL PIPE SHALL BE BRASS OR TYPE "K" COPPER WITH APPROPRIATE CONNECTIONS.



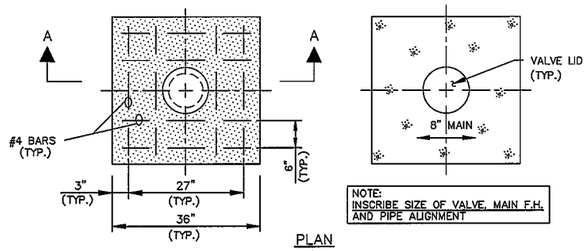
SECTION A-A

2" BLOW-OFF VALVE



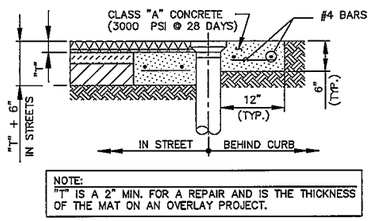
NOTES:
1. 4' ROUND VAULT SIDE WALL SHALL BE PRECAST REINFORCED CONCRETE PIPE. TONGUE AND GROOVE DESIGN TYPE, MEETING THE REQUIREMENTS OF A.S.T.M. -C-76 (CLASS III), OR EQUAL WITH RAM-NEK PLASTIC SEAL JOINT SEALER OR POURED IN PLACE REINFORCED CLASS "A" (3000 PSI @ 28 DAYS) CONCRETE. WALL SHALL BE REINFORCED WITH #4 BARS SPACED 6" C/C HORIZONTALLY & VERTICALLY.
2. JOINTS ARE TO BE NPT, FLANGED OR COMPRESSION JOINT NO SWEATED OR SOLDER JOINTS WILL BE ALLOWED.
3. DIFFERENT SIZE BLOW-OFF VALVES SHALL BE AS IN PLANS.

COMBINATION AIR RELEASE VALVE BEHIND CURB



NOTE: INSCRIBE SIZE OF VALVE, MAIN F.H. AND PIPE ALIGNMENT

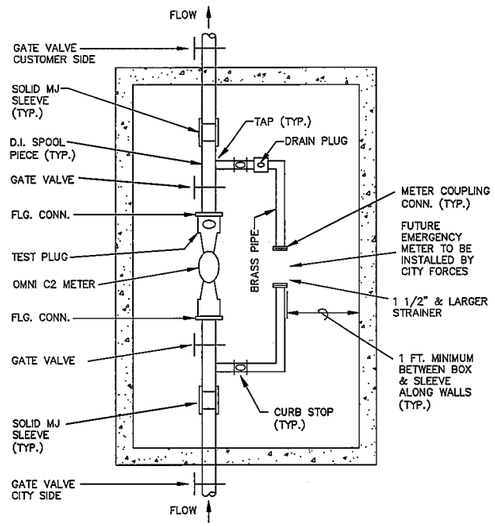
PLAN



NOTE: "T" IS A 2" MIN. FOR A REPAIR AND IS THE THICKNESS OF THE MAT ON AN OVERLAY PROJECT.

SECTION A-A

REINFORCED CONCRETE PAD AT VALVE BOX



COMMERCIAL METER SETUP MATERIAL LIST:

THE CITY WILL SUPPLY AND INSTALL THE METERS. SEE DETAIL FOR METER SET COMBINATION, TEST PLUG LOCATION AND WHAT MATERIAL IS NEEDED FROM THIS LIST.

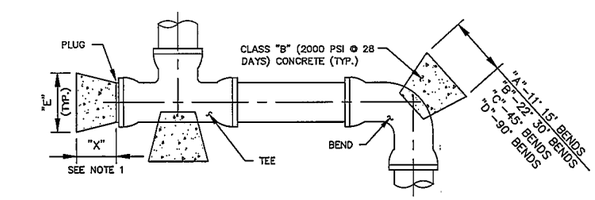
- DUCTILE IRON SPOOL PIECES, FLANGE BY PLAIN END CLASS 53
- BRASS THREADED PIPE (NO COPPER PIPE & NO SWEAT JOINTS)
- DUCTILE IRON SOLID SLEEVE (12" LENGTH MIN.) WITH MEGA LUG JOINTS RESTRAINT
- DUCTILE IRON PIPE CLASS 53
- BRASS THREADED 90
- 1"-2" CURB STOPS: MUELLER H-10283 OR APPROVED EQUAL
- 2"-6" GATE VALVES: MUELLER A-2360-6 OR APPROVED EQUAL
- 1" METER COUPLING FORD C38-44-2.625 OR APPROVED EQUAL
- 1" POSITIVE DISPLACEMENT METER (LAY LENGTH 10 3/4")
- 1.5" OMNI C2 (LAY LENGTH 13" STRAINER INCLUDED)
- 2" OMNI C2 (LAY LENGTH 15 - 1/4" STRAINER INCLUDED)
- 3" OMNI C2 (LAY LENGTH 17 STRAINER INCLUDED)
- 4" OMNI C2 (LAY LENGTH 20 STRAINER INCLUDED)
- 6" OMNI C2 (LAY LENGTH 24 STRAINER INCLUDED)

NOTE: THESE LAY LENGTHS WILL ALLOW ROOM FOR GASKETS.
- 2" SET: 8'x5' BROOKS VAULT OR APPROVED EQUAL
- 3" SET: 9'x5' BROOKS VAULT OR APPROVED EQUAL
- 4" SET: 10'x5' BROOKS VAULT OR APPROVED EQUAL
- 6" SET: (SAME AS 4" SET)

NOTE: THE DEPTH OF THE VAULT WILL BE DETERMINED BY THE DEPTH OF EACH METER SERVICE LINE.

- LIDS: ALUMINUM, 350 LBS., 36"x36" OPENING (MIN. SIZE):
- BILCO J3AI OR BROOKS PCM-5 OR APPROVED EQUAL
- FLOOR IS TO BE CONCRETE SAME AS VAULT

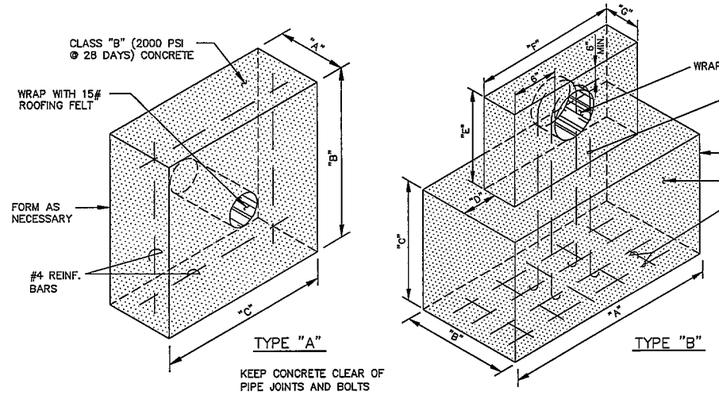
MAIN METER	EMERGENCY BY-PASS METER
3" TURBINE:	1" POSITIVE DISPLACEMENT
4" TURBINE:	1"- 1 1/2" POSITIVE DISPLACEMENT
6" TURBINE:	2" TURBINE METER



PIPE SIZE	"X"	11°-15° "A"	11°-15° MIN. AREA	11°-15° MIN. VOL.	22°-30° "B"	22°-30° MIN. AREA	22°-30° MIN. VOL.	45° "C"	45° MIN. AREA	45° MIN. VOL.	90° "D"	90° MIN. AREA	90° MIN. VOL.	TEE & PLUGS "D"	TEE & PLUGS MIN. AREA	TEE & PLUGS MIN. VOL.
4"	1.00	1.50	2.25	0.10	1.50	2.25	0.10	1.50	2.25	0.10	1.50	2.25	0.10	1.50	2.25	0.10
6"	1.50	1.50	2.25	0.15	1.50	2.25	0.15	1.50	2.25	0.15	1.75	3.20	0.20	1.50	2.25	0.15
8"	1.50	1.75	3.20	0.20	1.75	3.20	0.20	1.75	3.20	0.20	2.00	4.00	0.25	1.75	3.20	0.20
10"	1.50	2.00	4.00	0.25	2.00	4.00	0.25	2.00	4.00	0.25	2.25	5.10	0.35	2.00	4.00	0.25
12"	1.50	2.25	5.00	0.30	2.25	5.00	0.30	2.25	5.00	0.30	2.80	8.00	0.50	2.40	5.80	0.35
16"	2.00	2.50	6.30	0.45	2.50	6.30	0.45	2.80	6.00	0.60	3.75	14.10	1.00	3.20	10.00	0.75
20"	2.00	2.75	7.80	0.60	2.75	12.50	0.60	3.50	12.50	0.90	4.75	22.60	1.70	4.00	16.00	1.20
24"	2.00	3.10	9.30	0.75	3.20	18.20	0.80	4.30	18.20	1.40	5.75	33.00	2.45	4.80	23.00	1.75
30"	2.50	3.50	12.30	1.10	3.80	27.00	1.30	5.20	27.00	2.50	6.80	46.00	3.40	5.90	35.00	2.60
36"	2.50	3.90	15.40	1.50	4.50	40.00	1.90	6.30	40.00	3.70	7.90	63.00	5.10	7.10	51.00	3.75
42"	3.00	4.30	18.50	2.00	5.25	55.00	3.00	7.40	55.00	5.10	9.00	81.00	7.90	8.30	69.00	5.25
48"	3.00	4.70	21.80	2.50	6.00	72.00	4.00	8.50	72.00	6.70	10.80	116.00	10.40	9.50	90.00	8.25
54"	4.00	5.00	25.00	3.70	6.75	92.00	6.70	9.60	92.00	10.00	13.00	169.00	16.00	10.70	115.00	12.00

NOTES:
1. DIMENSION "X" MAY VARY IF NECESSARY TO PROVIDE BEARING AGAINST UNDISTURBED TRENCH WALL.
2. LENGTHS ARE IN UNITS OF FEET, AREAS ARE IN UNITS OF SQUARE FEET, AND VOLUMES ARE IN UNITS OF CUBIC YARDS.
3. IF IN THE OPINION OF THE CITY, THE UNDISTURBED TRENCH WALL DOES NOT EXHIBIT ADEQUATE SOIL BEARING CHARACTERISTICS, THE VOLUME OF CONCRETE SHOWN IN THE TABLE SHALL BE INCREASED. THE ADJUSTED QUANTITIES MUST BE APPROVED BY THE CITY ENGINEER. ON CITY CONTRACT PROJECT, THERE SHALL BE NO ADDITIONAL COMPENSATION FOR THE LARGER THRUST BLOCKS.
4. VERTICAL DIMENSION OF ALL BLOCK BEARING AREAS SHALL BE IDENTICAL TO HORIZONTAL DIMENSIONS SHOWN.
5. THE THRUST BLOCKING SHALL BE CONSIDERED SUBSIDIARY TO THE COST OF INSTALLING THE PIPE.

HORIZONTAL BLOCKING



NOTES:
1. THE VERTICAL TIE-DOWN BLOCKING SHALL BE CONSIDERED SUBSIDIARY TO THE COST OF INSTALLING THE PIPE.
2. DIMENSIONS "E", "F" AND "G" REINFORCING BAR PATTERN AND VOLUME OF CONCRETE WILL BE SPECIFIED ON PLANS OR AS DIRECTED BY THE ENGINEER ON PIPES LARGER THAN 12 INCHES. ON PIPES 12" AND SMALLER, DIMENSION "E" AND "F" SHALL BE O.D. + 12", AND "G" SHALL BE A MINIMUM OF 6".

VERTICAL TIE-DOWN BLOCK

NOTE: THE CONTRACTOR IS TO PROVIDE A 2" TEST TAP ON THE CUSTOMER SIDE OF THE METER. A DOUBLE STRAP BRONZE SADDLE WITH IP BRASS PLUG IS TO BE USED FOR ALL 3" AND LARGER SETS. A 2" BRASS TEE IS REQUIRED FOR 2" METER SETS.

TAP FOR 3" SERVICE AND LARGER

PIPE NOMINAL DIA. (IN.)	BENDS			90°	45°	22 1/2°	11 1/4°
	VOL.	REQ'D.	C.F.	39.99	21.64	11.03	5.54
6		A	Ft.	2.50	1.42	1.00	0.75
		B	Ft.	4.00	3.88	3.36	2.75
		C	Ft.	4.00	3.88	3.36	2.75
	VOL.	REQ'D.	C.F.	71.09	38.47	19.61	9.85
8		A	Ft.	2.83	1.67	1.50	1.00
		B	Ft.	5.00	4.80	3.66	3.20
		C	Ft.	5.00	4.80	3.66	3.20
	VOL.	REQ'D.	C.F.	111.07	60.11	30.65	15.40
10		A	Ft.	3.25	1.92	1.75	1.50
		B	Ft.	5.90	5.60	4.25	3.25
		C	Ft.	5.90	5.60	4.25	3.25
	VOL.	REQ'D.	C.F.	159.94	86.56	44.13	22.17
12		A	Ft.	4.17	2.42	1.42	1.25
		B	Ft.	6.20	6.00	5.54	4.20
		C	Ft.	6.20	6.00	5.54	4.20

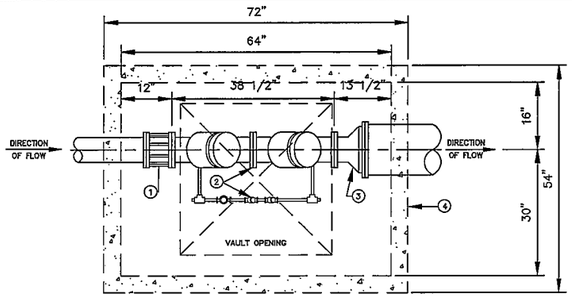
NOTE: VOLUME CALCULATED ON THE BASIS OF THE CONCRETE REACTING THRUST ON RESPECTIVE BENDS UNDER AN INTERNAL PRESSURE OF 150 PSIG AT THE RATE OF 150 LB. WT. PER CU. FT. OF CONCRETE.

WATER LINE DETAILS

SERVICE TAP, BLOW-OFF VALVE AND BLOCKING

PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
1505 PRECINCT LINE ROAD
HURST, TEXAS 76054
817-788-7076

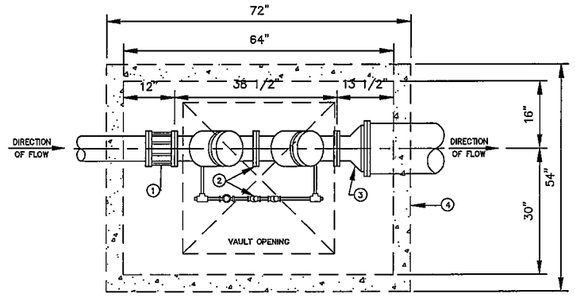
DESIGN	DRAWN	CHECKED	DATE	SCALE	REVISED	SHEET NO.
C.O.H.	R.O.	C.F.D.	JAN. 1998	N.T.S.	AUG. 2014	STD. DEETS W-3 OF 5



MATERIAL LIST		
PART NO.	QUANTITY	DESCRIPTION
1	1 EA.	4" FLANGED COUPLING COUPLING ADAPTER
2	1 EA.	4" DOUBLE DETECTOR CHECK ASSEMBLY WITH 3/4" BY-PASS (5/8" METER, 3/4" DOUBLE CHECK VALE ASSEMBLY)
3	1 EA.	4"x12" D.I. NIPPLE MJxF
4	1 EA.	PRECAST D.C. VAULT
	1 EA.	D.C. VAULT FLOOR (NOT SHOWN)
	1 EA.	36"x36" ACCESS DOOR (NOT SHOWN) 350 LBS. ALUMINUM BILCO J-4AL OR EQUAL.

NOTE:
THIS DEVICE IS INSTALLED ON THE OWNER'S PROPERTY, PREFERABLY INSIDE THE STRUCTURE. THE DEVICE IS THE OWNER'S RESPONSIBILITY. THE DEVICE SHALL BE TESTED AT THE TIME OF INSTALLATION BY A QUALIFIED TESTER AS APPROVED BY THE CITY OF HURST.

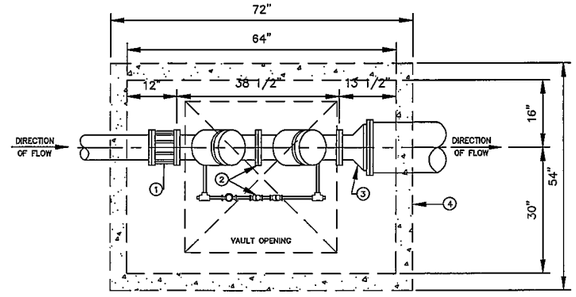
4" CLOSED FIRE LINE SERVICE WITH 4" DOUBLE DETECTOR CHECK DEVICE



MATERIAL LIST		
PART NO.	QUANTITY	DESCRIPTION
1	1 EA.	6" FLANGED COUPLING COUPLING ADAPTER
2	1 EA.	6" DOUBLE DETECTOR CHECK ASSEMBLY WITH 3/4" BY-PASS (5/8" METER, 3/4" DOUBLE CHECK VALE ASSEMBLY)
3	1 EA.	6"x12" D.I. NIPPLE MJxF
4	1 EA.	PRECAST D.C. VAULT
	1 EA.	D.C. VAULT FLOOR (NOT SHOWN)
	1 EA.	36"x36" ACCESS DOOR (NOT SHOWN) 350 LBS. ALUMINUM BILCO J-4AL OR EQUAL.

NOTE:
THIS DEVICE IS INSTALLED ON THE OWNER'S PROPERTY, PREFERABLY INSIDE THE STRUCTURE. THE DEVICE IS THE OWNER'S RESPONSIBILITY. THE DEVICE SHALL BE TESTED AT THE TIME OF INSTALLATION BY A QUALIFIED TESTER AS APPROVED BY THE CITY OF HURST.

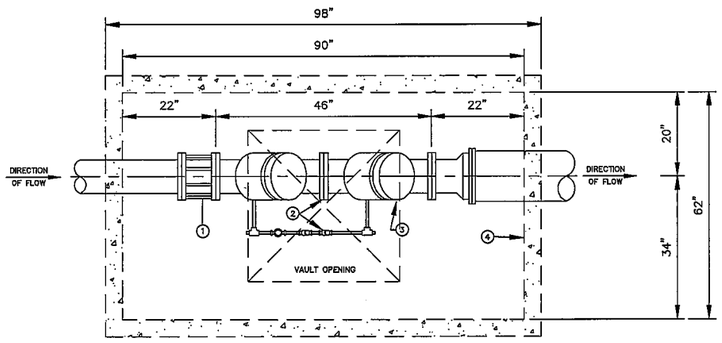
6" CLOSED FIRE LINE SERVICE WITH 6" DOUBLE DETECTOR CHECK DEVICE



MATERIAL LIST		
PART NO.	QUANTITY	DESCRIPTION
1	1 EA.	8" FLANGED COUPLING COUPLING ADAPTER
2	1 EA.	6" DOUBLE DETECTOR CHECK ASSEMBLY WITH 3/4" BY-PASS (5/8" METER, 3/4" DOUBLE CHECK VALE ASSEMBLY)
3	1 EA.	8"x12" D.I. NIPPLE MJxF
4	1 EA.	PRECAST D.C. VAULT
	1 EA.	D.C. VAULT FLOOR (NOT SHOWN)
	1 EA.	36"x36" ACCESS DOOR (NOT SHOWN) 350 LBS. ALUMINUM BILCO J-4AL OR EQUAL.

NOTE:
THIS DEVICE IS INSTALLED ON THE OWNER'S PROPERTY, PREFERABLY INSIDE THE STRUCTURE. THE DEVICE IS THE OWNER'S RESPONSIBILITY. THE DEVICE SHALL BE TESTED AT THE TIME OF INSTALLATION BY A QUALIFIED TESTER AS APPROVED BY THE CITY OF HURST.

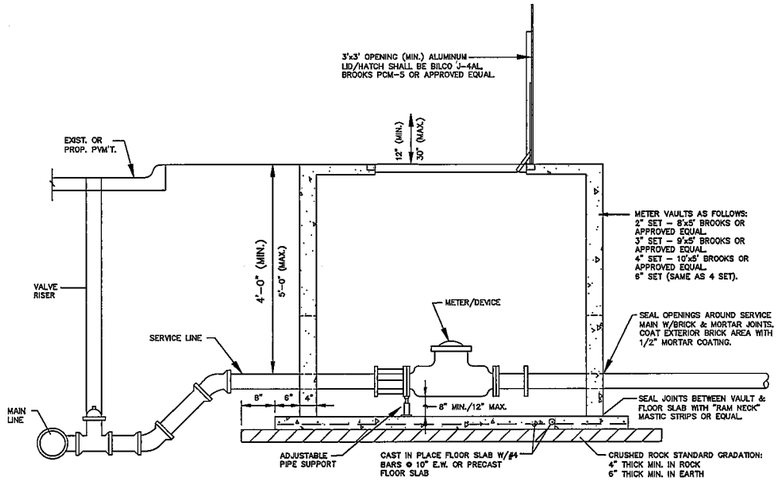
8" CLOSED FIRE LINE SERVICE WITH 6" DOUBLE DETECTOR CHECK DEVICE



MATERIAL LIST		
PART NO.	QUANTITY	DESCRIPTION
1	1 EA.	8" FLANGED COUPLING COUPLING ADAPTER
2	1 EA.	8" DOUBLE DETECTOR CHECK ASSEMBLY WITH 3/4" BY-PASS (5/8" METER, 3/4" DOUBLE CHECK VALE ASSEMBLY)
3	1 EA.	8"x12" D.I. NIPPLE MJxF
4	1 EA.	PRECAST D.C. VAULT
	1 EA.	D.C. VAULT FLOOR (NOT SHOWN)
	1 EA.	36"x36" ACCESS DOOR (NOT SHOWN) 350 LBS. ALUMINUM BILCO J-4AL OR EQUAL.

NOTE:
THIS DEVICE IS INSTALLED ON THE OWNER'S PROPERTY, PREFERABLY INSIDE THE STRUCTURE. THE DEVICE IS THE OWNER'S RESPONSIBILITY. THE DEVICE SHALL BE TESTED AT THE TIME OF INSTALLATION BY A QUALIFIED TESTER AS APPROVED BY THE CITY OF HURST.

8" CLOSED FIRE LINE SERVICE WITH 8" DOUBLE DETECTOR CHECK DEVICE



ELEVATION

TYPICAL FIRE LINE WITH LARGE METER VAULT

GENERAL DESCRIPTION OF LARGE WATER SERVICE AND BACKFLOW DEVICES:

A COMBINED WATER SERVICE IS DESIGNED TO PROVIDE A CUSTOMER WITH DOMESTIC WATER AND WATER FOR PRIVATE FIRE PROTECTION SYSTEMS BY MEANS OF ONE WATER SERVICE AND WATER METER. METERING IS NORMALLY PERFORMED BY A COMMERCIAL METER SETUP (SEE STD. DETAIL FOR 2" SERVICE AND LARGER) WHICH REGISTERS THE NORMAL DOMESTIC FLOW RATES AND ALSO HAS THE CAPACITY TO HANDLE THE HIGH FLOW RATES ASSOCIATED WITH FIRE PROTECTION SYSTEMS. THIS SYSTEM REQUIRES A DOUBLE CHECK VALVE ASSEMBLY.

A DOMESTIC SERVICE IS DESIGNED TO PROVIDE WATER FOR GENERAL DOMESTIC USE AND CONSUMPTION. DOMESTIC SERVICES ARE NOT DESIGNED TO HANDLE THE MOMENTARY HIGH FLOWS THAT ARE REQUIRED WITH INTERNAL FIRE PROTECTION SYSTEMS. IF A INTERNAL FIRE PROTECTION SYSTEM IS REQUIRED, A SEPARATE CLOSED FIRE LINE SERVICE, STANDPIPE FIRE LINE SERVICE OR COMBINED SERVICE WILL BE REQUIRED TO HANDLE THE INCREASE FLOW ASSOCIATED WITH FIRE PROTECTION. A DOUBLE CHECK VALVE ASSEMBLY WILL BE REQUIRED.

A CLOSED FIRE LINE SERVICE IS DESIGNED TO PROVIDE WATER FOR PRIVATE CLOSED FIRE SPRINKLER SYSTEM ONLY. ANY DOMESTIC WATER DEMAND IS TO BE SUPPLIED BY A SEPARATE DOMESTIC SERVICE OR A COMBINED WATER SERVICE. THE CLOSED FIRE LINE SERVICE UTILIZES A DOUBLE-DETECTOR CHECK DEVICE WHICH REGISTERS ANY FLOW OR TESTING OF FIRE SPRINKLER SYSTEM AND PREVENTS BACKFLOW INTO THE DISTRIBUTION SYSTEM.

A STANDPIPE FIRE LINE SERVICE IS DESIGNED TO PROVIDE WATER FOR A PRIVATE FIRE PROTECTION SYSTEM WHICH MAY BE COMPOSED OF INTERNAL FIRE HYDRANTS, HOSE RACKS OR ANY OTHER FIRE FIGHTING APPURTENANCES FOR WHICH WATER MAY BE TAKEN MANUALLY. A STANDPIPE FIRE LINE SERVICE MAY ALSO CONTAIN AUTOMATIC SPRINKLER HEADS. ANY DOMESTIC WATER DEMAND IS TO BE SUPPLIED BY A SEPARATE DOMESTIC SERVICE OR A COMBINED WATER SERVICE.

A DOUBLE-DETECTOR CHECK DEVICE IS INSTALLED TO PROVIDE BACKFLOW PREVENTION FOR WATER DISTRIBUTION SYSTEM. THE DEVICE HAS A 5/8" OR 3/4" WATER METER TO DETECT SMALL FLOWS. THIS DEVICE IS INSTALLED ON THE OWNER'S PROPERTY, PREFERABLY INSIDE THE STRUCTURE AND IS THE OWNER'S RESPONSIBILITY THE 5/8"x3/4" METER WILL REQUIRE A DOUBLE CHECK VALVE.

A DOUBLE CHECK VALVE IS NORMALLY INSTALLED ON LANDSCAPE IRRIGATION SYSTEMS TO PREVENT BACKFLOW IN TO THE WATER DISTRIBUTION SYSTEM. THIS DEVICE IS INSTALLED ON PRIVATE PROPERTY AND IS THE OWNER'S RESPONSIBILITY. THE SYSTEM MUST BE TESTED BY A LICENSED AND CERTIFIED ORGANIZATION. A LIST OF APPROVED ORGANIZATIONS WILL BE AVAILABLE BY CITY'S WATER UTILITIES STAFF.

GENERAL NOTES:

1. ALL BURIED TEES AND BENDS SHALL BE THRUST BLOCKED AND MEGA-LUGS APPLIED AS PER APPURTENANCE.
2. BYPASS LINE MAY BE INSTALLED ON THE LEFT SIDE OF THE METER VAULT TO FACILITATE LIMITED WORKING AREA CONDITIONS WITH PERMISSION FROM THE WATER UTILITIES SUPERINTENDENT. (817) 788-7206.
3. BURIED FLANGED FITTINGS SHALL HAVE PROTECTIVE MORTAR COATING AS PER WATER APPURTENANCE SHEET.
4. ALL BURIED D.I. PIPE AND C.I. FITTINGS SHALL BE POLY-WRAPPED (W/8MILL).
5. CAST-IN-PLACE CONCRETE SHALL BE CLASS "A" CONC., EXCEPT FOR CONC. USED FOR THRUST BLOCKING, WHICH SHALL BE CLASS "B" CONC.
6. NON-PAVED AREAS, A CONC. PAD SHALL BE EXTENDED A MIN. OF 2' AROUND THE ACCESS HATCH, 1' AROUND THE VALVE RISER STACKS AND BE A MIN. OF 4" THICK INCLUDING #3 BAR STEEL REINFORCING.
7. ALL MECHANICAL JOINTS (M.J.) PIPE, VALVES AND FITTINGS ARE TO BE INSTALLED WITH RETAINER GLANDS.
8. THE INSTALLATION OF COMPACT FITTINGS AND DUCTILE IRON (D.I.) FITTINGS WILL BE CONSIDERED ON A CASE BY CASE BASIS.
9. METER TYPES AND SIZES FOR 2" AND LARGER SERVICE INSTALLATIONS WILL BE SPECIFIED BY THE HURST WATER UTILITIES DEPARTMENT AT (817) 788-7206.

   THE 3'x3' ALUMINUM ACCESS HATCH IS AVAILABLE THROUGH LOCAL
10. DISTRIBUTORS.

    THE DOUBLE-DETECTOR CHECK VALVES ARE AVAILABLE THROUGH LOCAL
11. DISTRIBUTORS. SPECIFICATIONS AND APPROVED DEVICES ARE AVAILABLE FROM THE BUILDING INSPECTIONS AT (817) 788-7088.

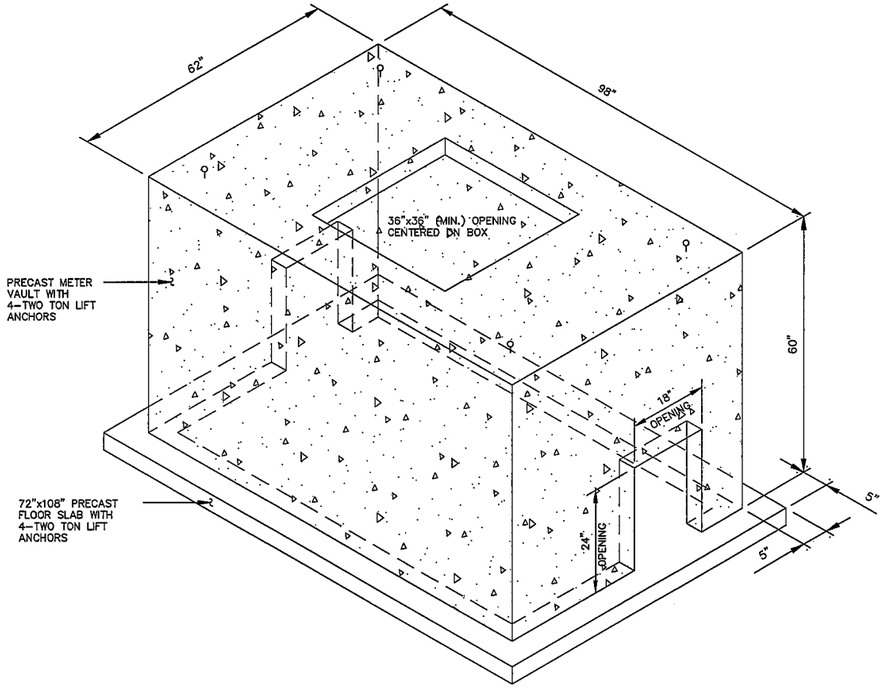
    CONTROL VALVES FOR THE DOUBLE-DETECTOR CHECK CAN BE INSTALLED INSIDE VAULT, BUT LARGER VAULT WILL BE REQUIRED THAN THOSE
12. INDICATED ON THE ATTACHED DOUBLE-DETECTOR CHECK DRAWINGS.

WATER LINE DETAILS

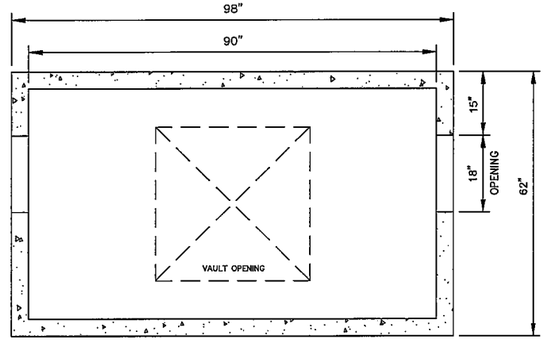
CLOSED FIRE LINE SERVICE WITH DOUBLE DETECTOR CHECK DEVICE

PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
1505 PRECINCT LINE ROAD
HURST, TEXAS 76054
817-788-7076

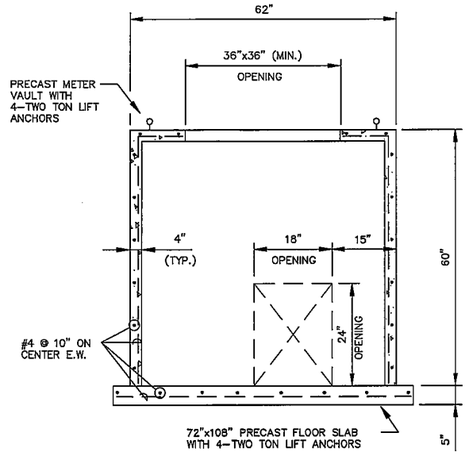
DESIGN	DRAWN	CHECKED	DATE	SCALE	REVISED	SHEET NO.
C.O.H.	R.O.	C.F.D.	AUG. 2002	N.T.S.	SEPT. 2011	STD. DEETS W-4 OF 5



PRECAST VAULT

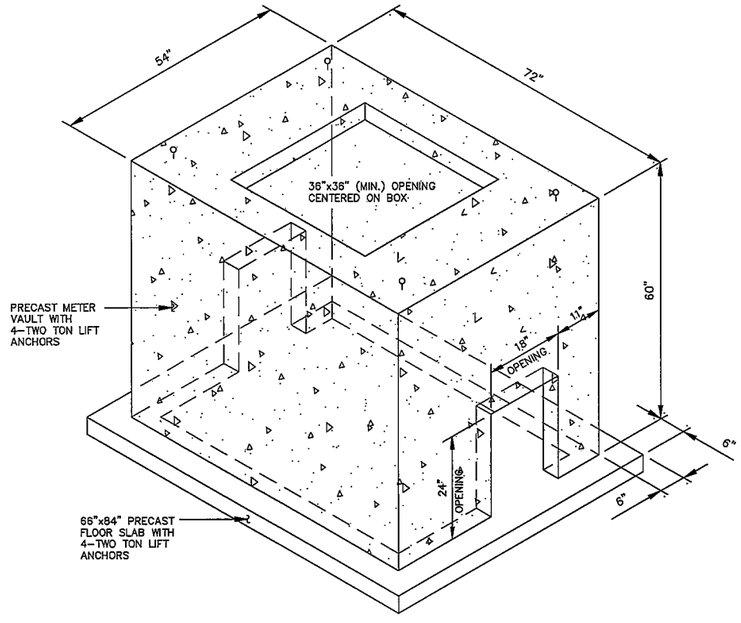


PLAN



SECTION

F.M. VAULT



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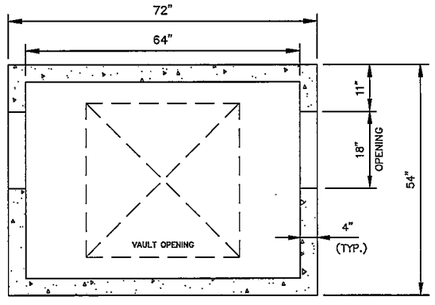

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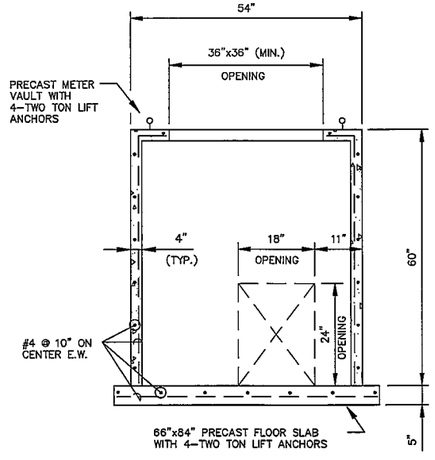


SECTION

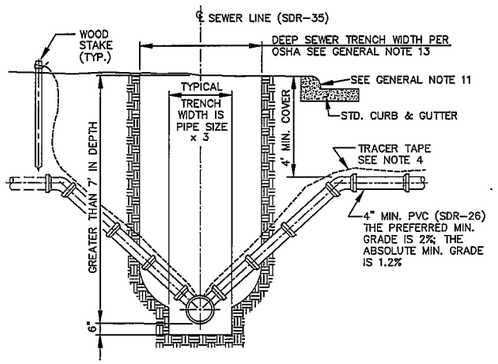
D.C. VAULT

WATER LINE DETAILS

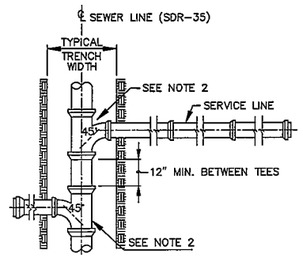
LARGE METER VAULT

PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
1505 PRECINCT LINE ROAD
HURST, TEXAS 76054
817-788-7076

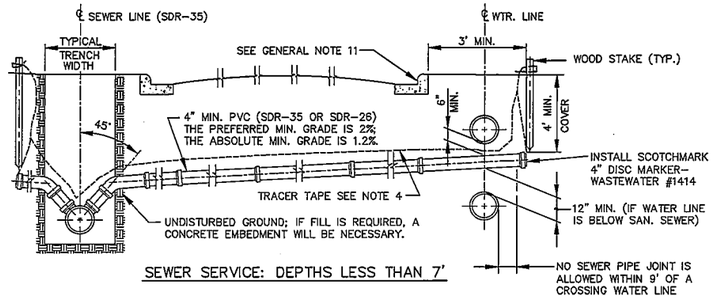
DESIGN	DRAWN	CHECKED	DATE	SCALE	REVISED	SHEET NO.
C.O.H.	R.O.	C.F.D.	AUG. 2002	N.T.S.	SEPT. 2011	STD. DEETS W-5 OF 5



SEWER SERVICE: DEPTHS GREATER THAN 7'



TOP VIEW

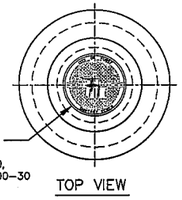


SEWER SERVICE: DEPTHS LESS THAN 7'

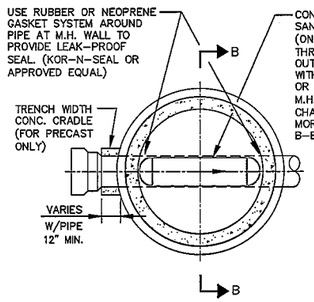
NOTES:
1. THE PRICE BID FOR THE SEWER SERVICE COMPLETE IN PLACE, SHALL INCLUDE ALL EMBEDMENT AND BACKFILL REQUIRED FOR SEWER MAINS.
2. TEES WILL BE REQUIRED FOR ALL SEWER SERVICE LINES WHEN INSTALLING THE MAIN SEWER LINE.
3. ALL SEWER TAPS (NOT PART OF THE SEWER MAIN CONSTRUCTION) WILL REQUIRE AN APPROVED SEWER SADDLE WITH STAINLESS STEEL BANDS.
4. ALL SEWER SERVICE LINE LOCATIONS WILL BE MARKED WITH A TERRA-TAPE (TRACER TAPE - 3" WIDE AND 10 MIL THICK). THE TAPE SHALL BE LAID ON TOP OF THE SERVICE LINE FROM THE MAIN SEWER TO THE END OF THE SERVICE LINE AT R.O.W. THEN UP TO A REF. STAKE TO FINISH GRADE. SEE DETAIL.

SEWER SERVICES

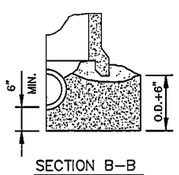
SANITARY SEWER GENERAL NOTES:
1. WATER AND SEWER LINES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT CITY OF HURST ORDINANCES, SPECIFICATIONS AND CODES.
2. DETECTABLE TRACER (TERRA TAPE OR APPROVED EQUAL) SHALL BE LAID WITH PVC PIPE AND CONNECTED TO ALL FITTINGS. TAPE SHALL BE LAID 12" ABOVE THE TOP OF PIPE OR ON TOP OF SAND BACKFILL.
3. MINIMUM CLEARANCE BETWEEN NEW WATER AND SEWER LINES SHALL BE 9' EXCEPT WHERE NOTED ON THE PLANS. ANY AND ALL EXCEPTIONS SHALL BE CONSTRUCTED ACCORDING TO TEXAS DEPARTMENT OF HEALTH CRITERIA.
4. ALL DITCH LINES NOT UNDER STREETS AND NOT CLOSER THAN 2' OF BACK OF CURB SHALL BE COMPACTED TO 90% STANDARD PROCTOR DENSITY BY TAMPING. DITCHES UNDER STREETS AND WITHIN 2' OF THE BACK OF CURB SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY BY TAMPING IN 6" TO 8" LIFTS. WATER JETTING IS NOT ALLOWED.
5. SANITARY SEWER LINES WITH A DEPTH OF 8' OR LESS SHALL BE SDR-35 PVC. WHEN THE DEPTH OF THE SEWER LINE EXCEEDS 8' IN DEPTH SDR-26 WILL BE REQUIRED, UNLESS OTHERWISED APPROVED BY THE CITY ENGINEER. WHENEVER THE SIZE OF THE SEWER LINE EXCEEDS 15" DIA. THE TYPE OF MATERIAL SHALL BE AS SPECIFIED IN THE PLANS.
6. SANITARY SEWER SERVICES SHALL BE MADE WITH AN SDR-35 PVC SERVICE TEE AND SHALL BE LOCATED 10' FROM THE CENTERLINE OF THE LOT NEAREST THE POINT OF THE LOWER SANITARY SEWER MAIN GRADE. SERVICE TAPS ON EXISTING MAINS SHALL BE MADE WITH SDR-35 PVC SADDLE WITH RUBBER RING, FASTENED WITH STAINLESS STEEL BANDS.
7. ALL SANITARY SEWER LINES SHALL BE TELEVISED, BALL-TESTED, MANDREL-TESTED, AND 4 PSI AIR PRESSURE-TESTED FOR MINIMUM OF 5 MINUTES PRIOR TO PLACING INTO SERVICE. CITY CREWS WILL TELEVISE THE LINES. THIS SERVICE REQUIRES 24 HOURS ADVANCE NOTICE.
8. MANHOLE FRAMES AND 30" DIAMETER COVER WITH THE CITY OF HURST LOGO AS MANUFACTURED BY THE VULCAN FOUNDRY, INC.-CATALOG NO. VRM-30, BASS AND HAYS FOUNDRY-CATALOG NO. VRM300-30, OR APPROVED EQUAL, SHALL BE FURNISHED FOR ALL SANITARY SEWER MANHOLES. SEVERAL SUPPLIERS IN THIS AREA STOCK THE FRAME AND COVER.
9. CONCRETE FOR MANHOLES MUST CONFORM TO THE FOLLOWING UNLESS OTHERWISE MARKED:
   A. CLASS "A" CONC. (3000 PSI @ 28 DAYS) SHALL BE USED FOR ALL MANHOLES NOT CONSTRUCTED IN THE STREET.
   B. CLASS "C" CONC. (3600 PSI @ 28 DAYS) OR PRECAST REINF. CONC. SHALL BE USED FOR ALL MANHOLES CONSTRUCTED IN STREET.
10. USE ADJUSTABLE REPAIR COUPLING "FLEX-SEAL" AS MANUFACTURED BY MISSION RUBBER COMPANY OR APPROVED EQUAL.
11. LOCATIONS MARKS FOR SANITARY SEWER SERVICE, WATER SERVICE, WATER VALVES AND MANHOLES SHALL BE STAMPED INTO THE FRESH CONCRETE OR NEATLY SAWED ON TO THE CURB. THE MARKINGS FOR EACH IS AS FOLLOWS:
   A. SANITARY SEWER SERVICE - S
   B. WATER SERVICE - W
   C. WATER VALVE - V
   D. MANHOLES - MH
12. IF APPROVED BY CITY ENGINEER OR A DESIGNATED REPRESENTATIVE, SOIL FROM EXCAVATION MAY BE USED FOR BACKFILL AND SHALL BE COMPACTED TO 90% STANDARD PROCTOR DENSITY IN MAXIMUM 8" LIFTS.
13. WHEN THE TRENCH SAFETY EXCEED 5' IN DEPTH, THE CONTRACTOR SHALL MEET OR EXCEED THE O.S.H.A. STANDARDS FOR TRENCH SAFETY BASED ON SOIL CONDITIONS. A TRENCH SAFETY PLAN MUST BE SUBMITTED PRIOR TO START OF WORK.



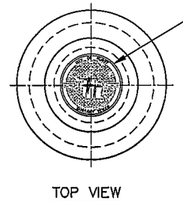
TOP VIEW



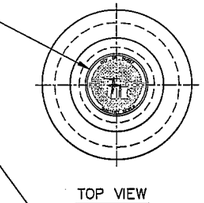
SECTION A-A



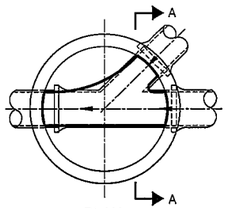
SECTION B-B



TOP VIEW



TOP VIEW

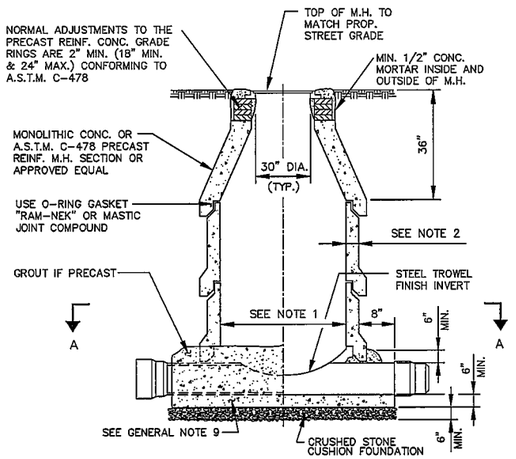


PLAN

SECTION A-A

NOTES:
1. WHEN POSSIBLE STD. PIPE FITTINGS SHALL BE USED TO FORM INVERTS AT JUNCTION MANHOLES USING THE FOLLOWING INSTALLATION:
   A. PIPE FITTINGS.
   B. POUR M.H. FLOOR TO SPRING LINE OF FITTING.
   C. CUT OUT TOP OF FITTING TO SPRING LINE.
   D. POUR REMAINDER OF M.H. INVERT TO PROVIDE VERTICAL INVERT WALL UP TO THE 3/4 POINT OF THE LARGE PIPE INVOLVED, SEE DETAIL.
   E. STEEL TROWEL FINISH INVERT OF MANHOLES.
2. WHEN SPECIAL SITUATIONS PROHIBIT USE OF THE STD. PIPE FITTINGS AS MENTIONED ABOVE, THE INVERT SHALL BE FORMED OF CONCRETE AND HAVE A STEEL TROWEL FINISH. THE FINAL PRODUCT SHALL HAVE A SIMILAR FORM & FUNCTION AS A STANDARD PIPE FITTINGS INSTALLATION.

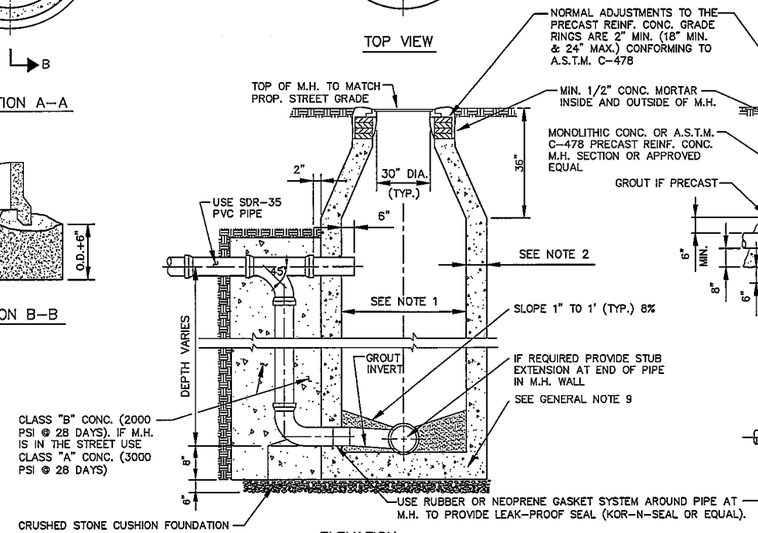
INVERTS AT JUNCTION MANHOLE



ELEVATION

NOTES:
1. THE CONTRACTOR SHALL USE A 4' DIA. M.H. FOR SAN. SEWER PIPES UP TO 21" IN DIA. AND SHALL USE A 5' DIA. M.H. FOR LARGER PIPES.
2. THE WALL THICKNESS FOR 4' DIA. PRECAST AND MONOLITHIC (POURED IN PLACE) CONC. M.H. SHALL BE 6". ALL 5' DIA. M.H.'S SHALL HAVE A WALL THICKNESS OF 8".

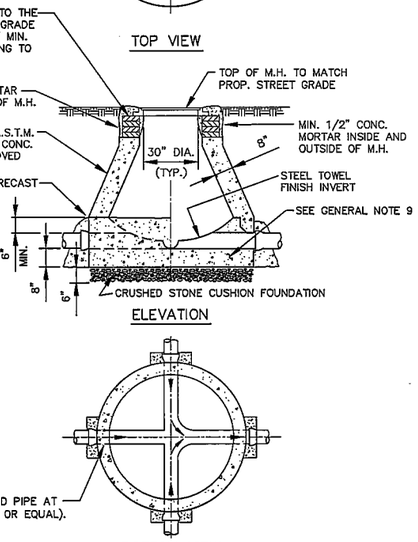
STANDARD MANHOLE



ELEVATION

NOTES:
1. THE CONTRACTOR SHALL USE A 4' DIA. M.H. FOR SAN. SEWER PIPES UP TO 21" IN DIA. AND SHALL USE A 5' DIA. M.H. FOR LARGER PIPES.
2. THE WALL THICKNESS FOR 4' DIA. PRECAST AND MONOLITHIC (POURED IN PLACE) CONC. M.H. SHALL BE 6". ALL 5' DIA. M.H.'S SHALL HAVE A WALL THICKNESS OF 8".

DROP MANHOLE



ELEVATION

BOTTOM VIEW

NOTE:
UTILIZE SHALLOW M.H. WHERE SEWER LINES ARE LESS THAN 4' DEEP.

SHALLOW MANHOLE

SANITARY SEWER DETAILS

MANHOLE AND SERVICE

PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
1505 PRECINCT LINE ROAD
HURST, TEXAS 76054
817-788-7075

DESIGN	DRAWN	CHECKED	DATE	SCALE	REVISED	SHEET NO.
C.O.H.	R.O.	C.F.D.	JAN. 1998	N.T.S.	SEPT. 2011	STD. DEETS SS-1 OF 3

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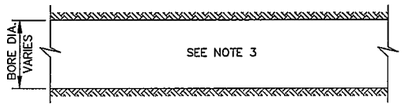
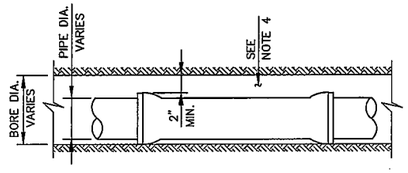
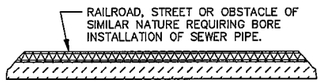
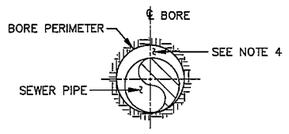


BORE SECTION



BORE WITH PIPE INSTALLED

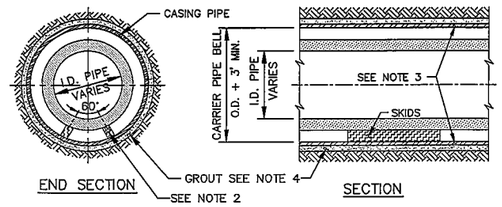




END VIEW

NOTES:
1. SELECT MATERIAL SHALL BE IN 8" LIFTS (MAX.), COMPACTED TO 95% STANDARD PROCTOR DENSITY BY TAMPING.
2. IF SELECT GRAVEL OR SAND BACKFILL IS USED, THE LIFT THICKNESS MAY BE INCREASED TO 15" (MAX.) AND COMPACTED BY VIBRATOR TAMPING.
3. THE EXCAVATED MATERIAL MAY BE USED AS "SELECT BACKFILL" ONLY UPON APPROVAL OF THE CITY.
4. THE CITY MAY REQUIRE SOILS COMPACTION TEST, EVERY OTHER LIFT AND EVERY 200 L.F. THE EXPENSE IS TO BE BORNE BY CONTRACTOR OR UTILITY COMPANY.

BORE CROSSING

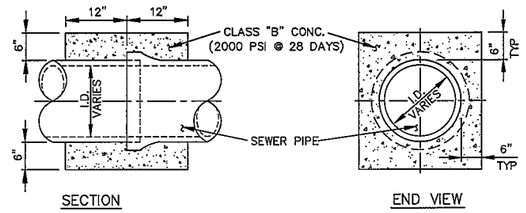


END SECTION SECTION

NOTES:
1. FOR SANITARY SEWER LINES, A LASER OR OTHER POSITIVE METHOD MUST BE USED TO MAINTAIN THE GRADE OF THE CASING PIPE.
2. FURNISH AND INSTALL THE APPROPRIATE SIZE HIGH DENSITY POLYETHYLENE (HDPE) CASING SPACERS, LIKE "RACI" TYPE HDPES SPACERS OR AN APPROVED EQUIVALENT, ON 5' C-C UNLESS OTHERWISE SHOWN.
3. TYPICAL CASING SHALL BE:
   A. STEEL CASING CULVERT PIPE, SPLIT CASING OR TUNNEL LINER.
   B. REINFORCED CONCRETE CULVERT PIPE.
   C. STEEL PIPE MINIMUM RATING OR 48.
4. AS SPECIFIED BY THE PW DIRECTOR OR HIS DESIGNEE, FURNISH AND INSTALL GROUT IN RATIO OF 1 CU. FT. OF CEMENT AND 3.5 CU. FT. OF CLEAN FINE SAND WITH SUFFICIENT WATER ADDED TO PROVIDE A FLOWING THICK SLURRY.

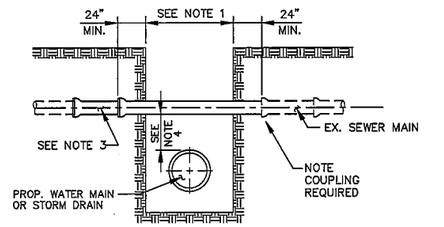
STEEL CASING SECTION

SELECT MATERIALS NOTES:
1. SELECT MATERIAL SHALL BE IN 8" LIFTS (MAX.), COMPACTED TO 95% STANDARD PROCTOR DENSITY BY TAMPING.
2. IF SELECT GRAVEL OR SAND BACKFILL IS USED, THE LIFT THICKNESS MAY BE INCREASED TO 15" (MAX.) AND COMPACTED BY VIBRATOR TAMPING.
3. THE EXCAVATED MATERIAL MAY BE USED AS "SELECT BACKFILL" ONLY UPON APPROVAL OF THE CITY.
4. THE CITY MAY REQUIRE SOILS COMPACTION TEST, EVERY OTHER LIFT AND EVERY 200 L.F. THE EXPENSE IS TO BE BORNE BY CONTRACTOR OR UTILITY COMPANY.



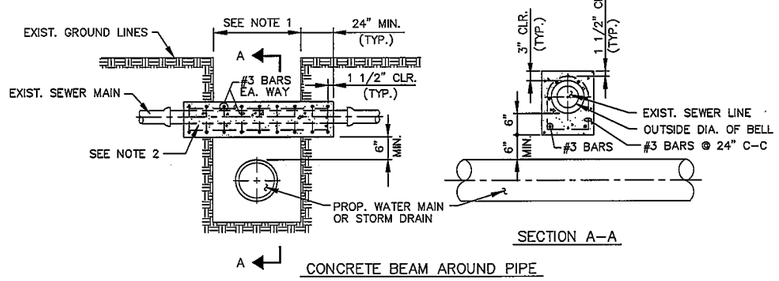
SECTION END VIEW

CONCRETE COLLAR



REPLACEMENT OF PIPE

NOTES:
1. VARIABLE TRENCH WIDTH. PIPE LENGTH SHALL BE MEASURED AS STANDARD TRENCH WIDTH, PLUS 4'. NO JOINTS WILL BE ALLOWED WITHIN THE DIMENSION. A MINIMUM DISTANCE OF 24" SHALL BE REQUIRED ON EACH SIDE OF THE TRENCH.
2. SEWER LINES LESS THAN 12" IN DIAMETER SHALL BE REPLACED WITH SDR-35 OR 26 PVC, SUPPORTED AND/OR ENCASED (IF REQUIRED) SEE DETAIL.
3. THE JOINING OF PVC TO IRON OR CLAY PIPE SHALL BE MADE WITH FLEX-SEAL ADJUSTABLE REPAIR COUPLING FOR PIPE CONNECTIONS. THE ENTIRE AREA EXCAVATED TO ACCOMPLISH THE REPLACEMENT SHALL COMPLY WITH REQUIREMENTS SHOWN IN "SEWER LINES EMBEDMENT AND BACKFILL" DETAILS.
4. THE MINIMUM VERTICAL CLEARANCE OF SEWER TO WATER LINES SHALL BE 2'.

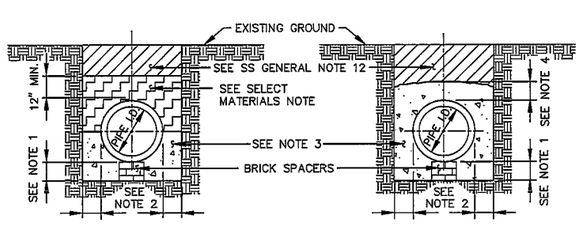


SECTION A-A

CONCRETE BEAM AROUND PIPE

NOTES:
1. VARIABLE TRENCH WIDTH. SUPPORT BEAM AND ENCASEMENT SHALL BE MEASURED AS THE STANDARD TRENCH WIDTH PLUS 4'. A MINIMUM BEARING OF 24" SHALL BE REQUIRED ON EACH SIDE OF THE TRENCH.
2. CONCRETE USED SHALL CONFORM TO THE FOLLOWING:
   A. REINFORCED CLASS "A" CONCRETE (3,000 PSI @ 28 DAYS) SHALL BE USED IN CONSTRUCTION OF A SUPPORTED BEAM AND ENCASEMENT FOR SEWER LINES LESS THAN 12" IN DIAMETER.
   B. REINFORCED CLASS "B" CONCRETE (2,000 PSI @ 28 DAYS) SHALL BE USED IN CONSTRUCTION OF A SUPPORTED BEAM AND ENCASEMENT FOR SEWER LINES 12" DIAMETER AND LARGER.
3. THE ENTIRE AREA EXCAVATED SHALL COMPLY WITH REQUIREMENTS SHOWN IN "SEWER LINE EMBEDMENT AND BACKFILL" DETAILS.

SANITARY SEWER PIPE TRENCH CROSSING



NOTES:
1. MINIMUM 6" DEPTH REQUIRED.
2. 27" MAINS OR SMALLER REQUIRE 6" CONC. ON EACH SIDE. 30" MAINS OR LARGER REQUIRE 9" CONC. ON EACH SIDE.
3. CLASS "B" CONC. (2000 PSI AT 28 DAYS) SHALL BE USED.
4. MINIMUM 4" DEPTH REQUIRED.
5. THERE WILL BE NO ADDITIONAL PAYMENT MADE FOR ANY CONC. THAT EXCEEDS THE MINIMUM DEPTH REQUIRED ON ALL BIDS PER CUBIC YARDS.
6. WHEN THE TRENCH OR EXCAVATION EXCEED 5 FEET IN DEPTH, THE CONTRACTOR SHALL MEET OR EXCEED O.S.H.A. STANDARDS FOR TRENCH SAFETY PLAN.

CONCRETE CRADLE

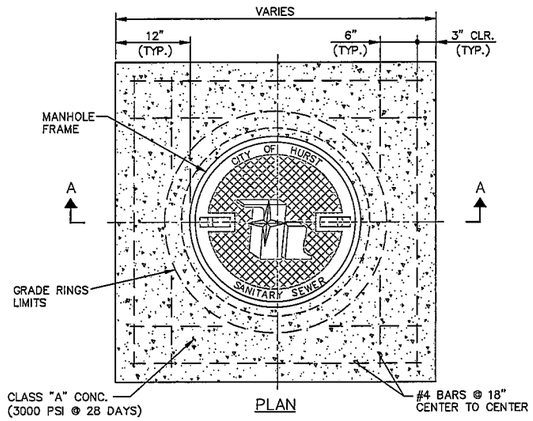
CONCRETE ENCASEMENT

SANITARY SEWER DETAILS

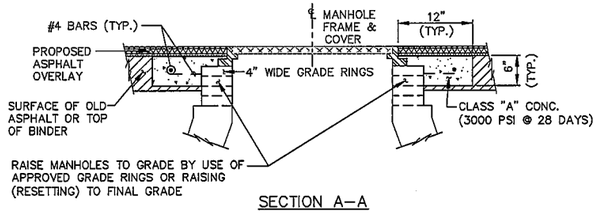
TRENCH AND ENCASEMENT

CITY OF HURST TEXAS
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
1505 PRECINCT LINE ROAD
HURST, TEXAS 76054
817-788-7076

DESIGN	DRAWN	CHECKED	DATE	SCALE	REVISED	SHEET NO.
C.O.H.	R.O.	C.F.D.	JAN. 1998	N.T.S.	SEPT. 2011	STD. DEETS SS-2 OF 3



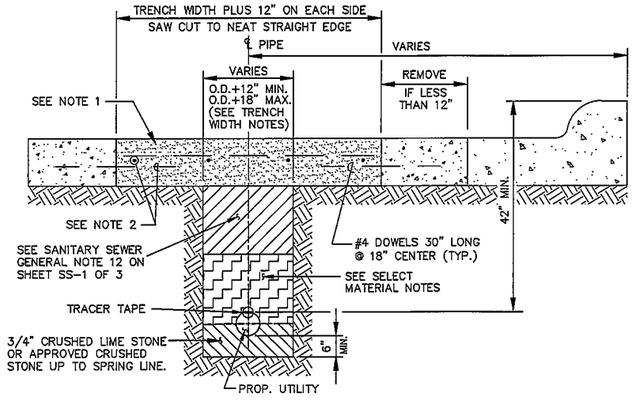
PLAN



SECTION A–A

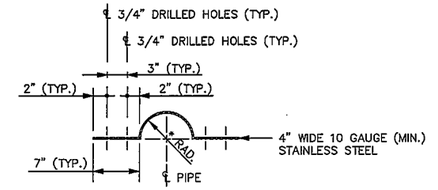
NOTE:
COLD–MIX SHALL BE PLACED AROUND MANHOLES AND COMPACTED TO PROTECT TRAFFIC UNTIL OVERLAY IS PLACED. COLD MIX TO BE REMOVED PRIOR TO PLACING HOT–MIX.

MANHOLE ADJUSTMENT

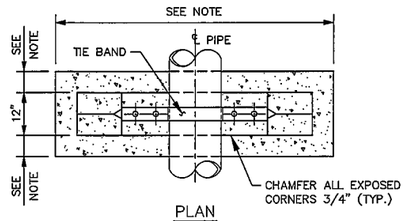


NOTES:
1. REPLACEMENT SHALL HAVE A MINIMUM THICKNESS OF 5" OR THE SAME AS THE EXISTING PAVEMENT, WHICHEVER IS GREATER. CLASS "A" CONCRETE (3000 PSI @ 28 DAYS) SHALL BE USED.
2. ONLY NEW REINFORCED BARS ARE TO BE USED FOR STREET CUT REPAIRS. ALL REINFORCED SHALL HAVE WIRE TIES (100% TIE) AT EVERY INTERSECTION. #4 DOWELS WILL BE LAPPED WITH #4 REBARS AT 18" CENTERS BOTH WAYS. THE DOWELS WILL BE EPOXY GROUTED, 30" LONG AND BE DRILLED 15" DEEP IN TO THE EXISTING PAVEMENT AT 18" CENTERS.

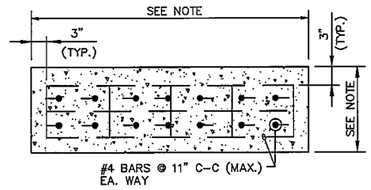
REINFORCED CONCRETE STREET REPAIR SECTION



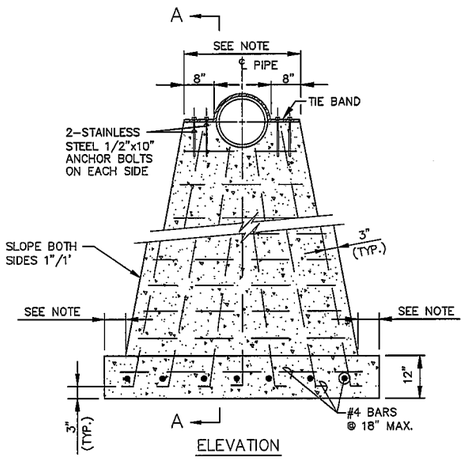
TIE DOWN BAND DETAIL



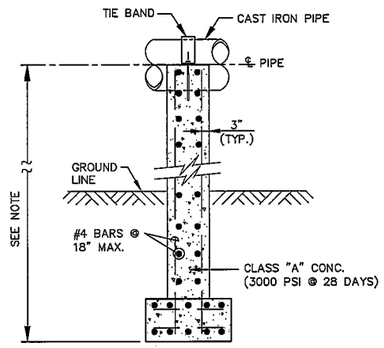
PLAN



BASE



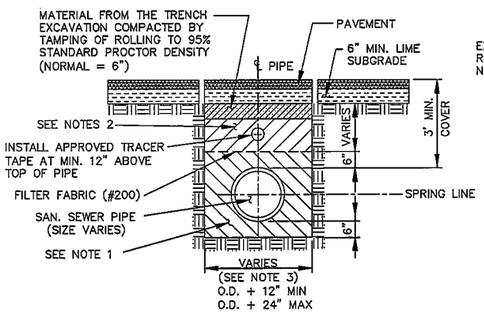
ELEVATION



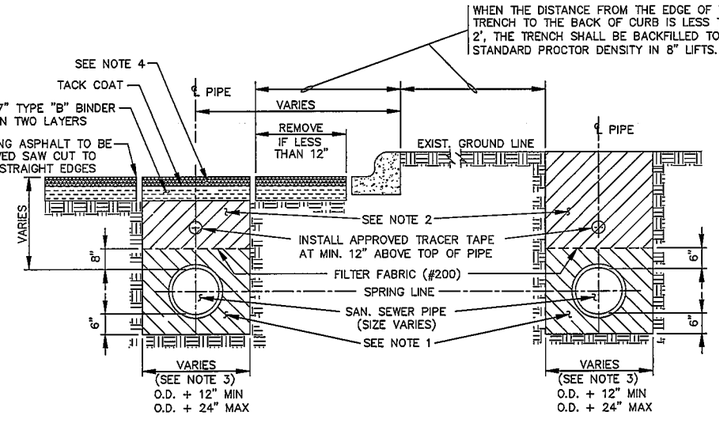
SECTION A–A

NOTE:
DIMENSIONS TO BE DETERMINED BY PIPE SIZE AND SOIL CONDITIONS.

CONCRETE PIER



TYPICAL SECTION WITHIN PROPOSED STREET
(STREET LIMITS PLUS 2 FT. BEYOND BACK OF CURB)



STREET REPAIR SECTION

DITCH LINE BEHIND CURB

NOTES:
1. CRUSHED STONE EMBEDMENT (NCTCOG FINE CRUSHED ROCK AGGREGATE GRADE #10) COMPACTED TO 95% STANDARD PROCTOR DENSITY.
2. IF BACKFILL MATERIAL IS DEEMED SUITABLE BY THE CITY ENGINEER AND MEETS THE REQUIREMENTS OF NCTCOG ITEM 2.1.8 (B), EXCLUDING SANDY LOAM, THE BACKFILL MUST BE MECHANICALLY COMPACTED BY TAMPING OR ROLLING TO 95% STANDARD PROCTOR DENSITY. A #200 FILTER FABRIC SHALL BE INSTALLED BETWEEN THE CRUSHED ROCK, NOTE 1, AND ANY BACKFILL MATERIAL.
3. WIDTH OF TRENCH AT TOP OF PIPE SHALL NOT EXCEED OUTSIDE DIAMETER OF PIPE PLUS 24".
4. FOR STREET REPAIR:
   A. THE PRIMARY COLLECTOR AND ARTERIAL STREETS REQUIRE A 2" H.M.A.C. (TYPE "D") SURFACE COURSE AND A 7" H.M.A.C. (TYPE "B") BINDER COURSE IN TWO LAYERS.
   B. ALL ASPHALT IS TO BE COMPACTED TO A MIN. OF 95% STANDARD LABORATORY DENSITY (THD BULLETIN C–14).
   C. ON CONCRETE STREETS THE PAVEMENT REPAIR TYPICAL SECTION SHALL BE AS APPROVED BY THE CITY ENGINEER OR DESIGNATED REPRESENTATIVE.

SEWER LINE EMBEDMENT AND BACKFILL

SANITARY SEWER DETAILS

STREET REPAIR, MANHOLE ADJUSTMENT AND PIER

PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
1505 PRECINCT LINE ROAD
HURST, TEXAS 76054
817–788–7076

DESIGN	DRAWN	CHECKED	DATE	SCALE	REVISED	SHEET NO.
C.O.H.	RO/EP	C.F.D.	AUG. 2002	N.T.S.	SEPT. 2011	STD. DEETS SS–3 OF 3

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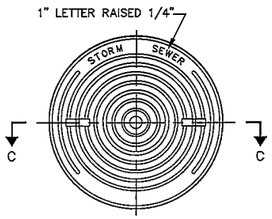
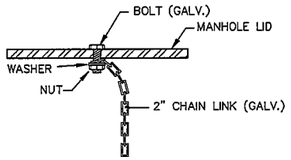
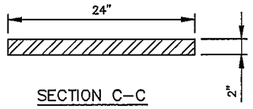


PLAN OF COVER

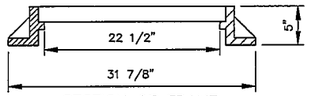


SECTION OF COVER

NOTES:
1. MANHOLE COVER AND FRAME SHALL BE BASS & HAYES NO. VRM30.
2. THE MANHOLE COVER SHALL BE SECURED TO THE INSIDE WALL OF THE MANHOLE AND THE COVER WITH A 2" LINK GALVANIZED CHAIN, BOLT, WASHER AND NUT. THE CHAIN SHOULD BE LONG ENOUGH TO REMOVE COVER AND PROVIDE EASY ACCESS INTO THE MANHOLE.



SECTION C–C

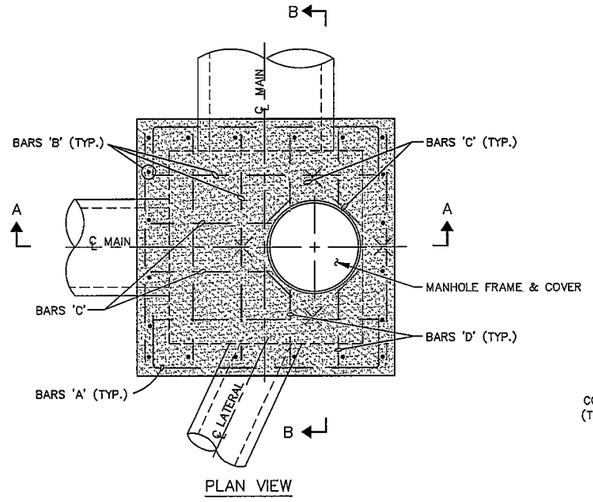


SECTION OF FRAME

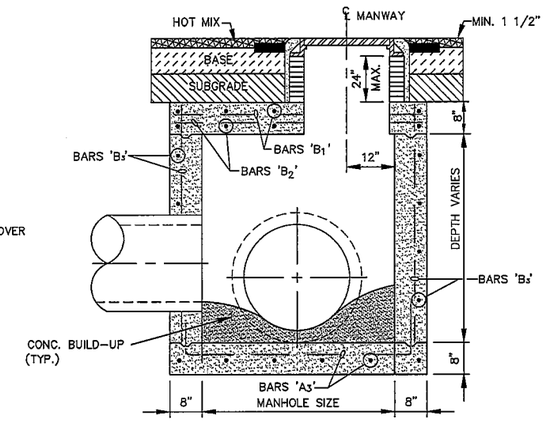
STORM DRAIN GENERAL NOTES:
1. CLASS "A" CONCRETE (3000 PSI @ 28 DAYS) SHALL BE USED FOR ALL STRUCTURES.
2. ALL DIMENSIONS FOR REINFORCING STEEL ARE AT THE CENTER LINE OF THE BARS, UNLESS OTHERWISE NOTED.
3. MANHOLES ARE REQUIRED AT ALL PIPE JUNCTIONS, CHANGES IN DIAMETER OF PIPE AND AT EVERY 500'.
4. MANHOLES BOTTOMS SHALL BE SHAPED TO MEET INVERTS OF PIPES.
5. THE BACKFILL AROUND THE MANHOLE SHALL BE SELECT MATERIAL LAID IN 8" LIFTS AND MECHANICALLY TAMPED.
6. CHAMFER ALL THE EXPOSED CORNERS 3/4" UNLESS OTHERWISE NOTED.
7. WIDTH OF TRENCH AT TOP OF PIPE SHALL NOT EXCEED O.D. OF PIPE PLUS 24 INCHES.
8. IF TRENCH BOTTOM IS DEEMED UNSTABLE, SOFT, SPONGY OR OTHERWISE UNSUITABLE MATERIAL BY CITY ENGINEER OR HIS REPRESENTATIVE, A CRUSHED STONE (NCTCOG AGGREGATE GRADE 4) COMPACTED TO 90% STANDARD PROCTOR DENSITY TO VARIABLE DEPTH, SHALL BE REQUIRED TO REPLACE THE UNSUITABLE SOIL.
9. WHEN THE TRENCH OR EXCAVATION EXCEEDS THE 5' DEPTH, THE CONTRACTOR SHALL MEET OR EXCEED O.S.H.A. STANDARDS FOR TRENCH SAFETY.

MANHOLE FRAME AND COVER

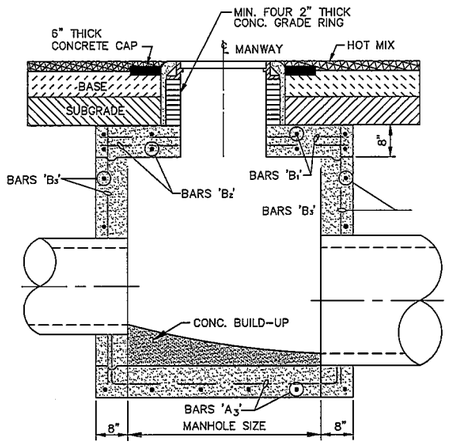
SELECT MATERIALS NOTES:
1. SELECT MATERIAL SHALL BE IN 8" LIFTS (MAX.), COMPACTED TO 95% STANDARD PROCTOR DENSITY BY TAMPING.
2. IF SELECT GRAVEL OR SAND BACKFILL IS USED, THE LIFT THICKNESS MAY BE INCREASED TO 15" (MAX.) AND COMPACTED BY VIBRATOR TAMPING.
3. THE EXCAVATED MATERIAL MAY BE USED AS "SELECT BACKFILL" ONLY UPON APPROVAL OF THE CITY.
4. THE CITY MAY REQUIRE SOILS COMPACTION TEST, EVERY OTHER LIFT AND EVERY 200 L.F. THE EXPENSE IS TO BE BORNE BY CONTRACTOR OR UTILITY COMPANY.



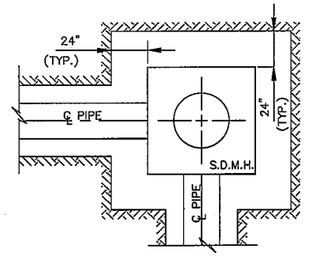
PLAN VIEW



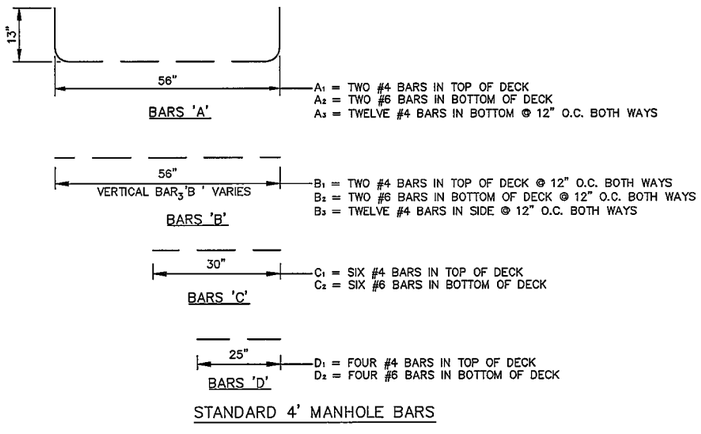
SECTION A–A



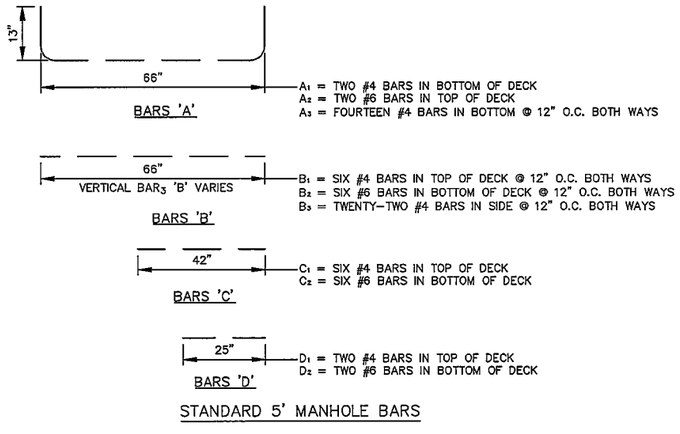
SECTION B–B



PIPE DIAMETER (INCH)	DISTANCE BETWEEN PIPES (INCH)	DISTANCE BETWEEN PIPE AND TRENCH ON EACH SIDE
18	9	9"
24	11	"
30	13	"
36	15	1/3 DIAMETER OF PIPE
42	17	"
48	19	"
54	23	"
60 TO 84	24	"



STANDARD 4' MANHOLE BARS



STANDARD 5' MANHOLE BARS

STREET REPAIR AT STORM DRAIN MANHOLE

STANDARD STORM DRAIN MANHOLE

STORM DRAIN DETAILS

STANDARD STORM DRAIN MANHOLE AND COVER

CITY OF HURST TEXAS
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
1505 PRECINCT LINE ROAD
HURST, TEXAS 76054
817–788–7076

DESIGN	DRAWN	CHECKED	DATE	SCALE	REVISED	SHEET NO.
C.O.H.	R.O.	C.F.D.	NOV. 1998	N.T.S.	FEB. 2011	STD. DEETS SD–1 OF 4

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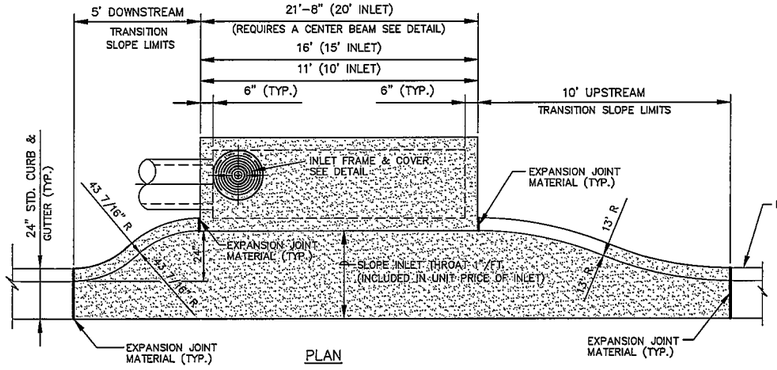
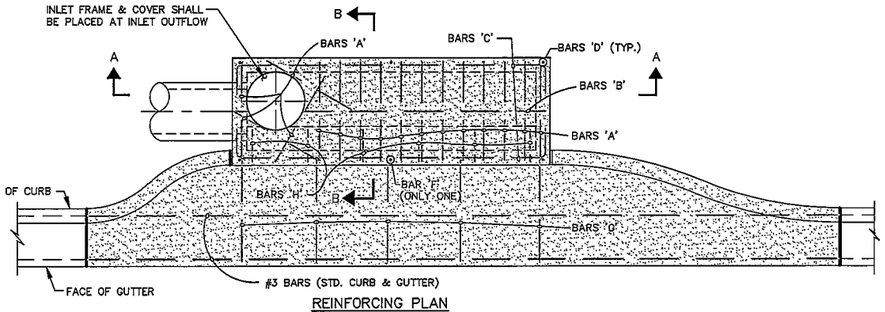
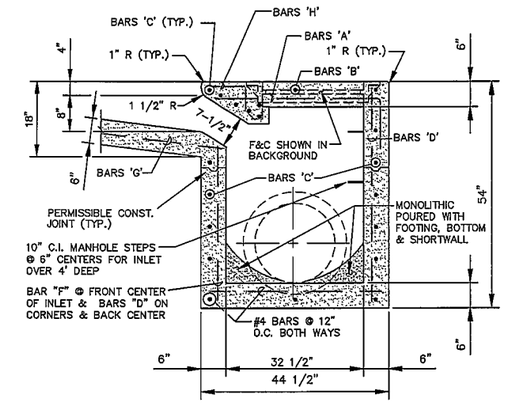


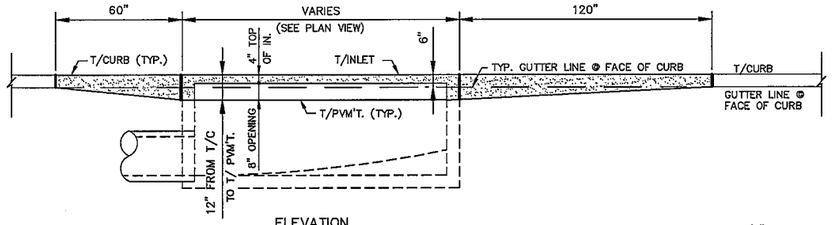
PLAN



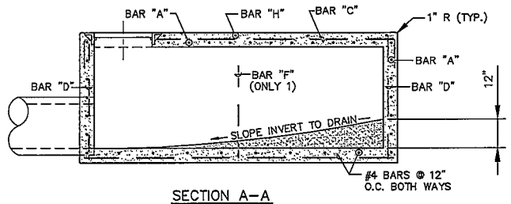
REINFORCING PLAN



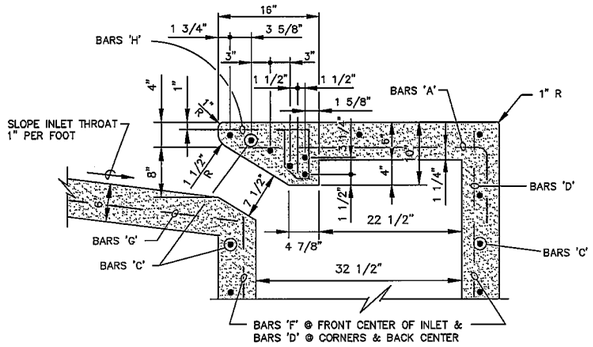
SECTION B-B



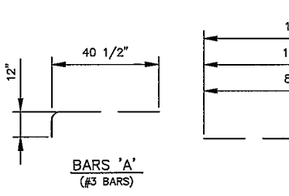
ELEVATION



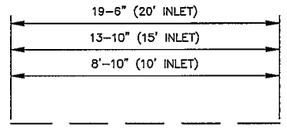
SECTION A-A



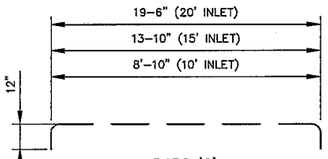
ENLARGE UPPER AREA OF SECTION B-B



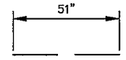
BARS 'A' (#3 BARS)



BARS 'B' (#3 BARS)

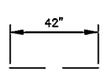


BARS 'C' (#4 BARS)

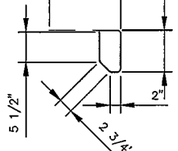


BARS 'D' (#4 BARS)

BAR 'F' (#4 BARS)



BARS 'G' (#3 BARS)



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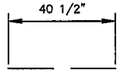
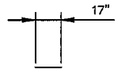
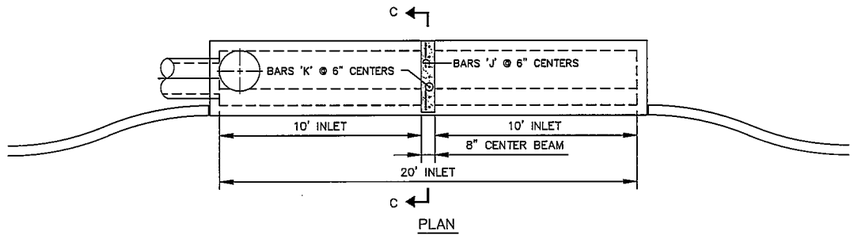


BARS 'J' (#4 BARS)

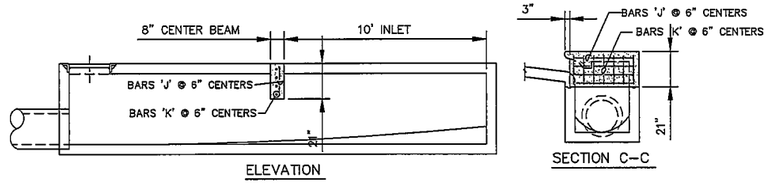


BARS 'K' (#4 BARS)

RECESS CURB INLET DETAIL



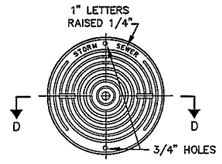
PLAN



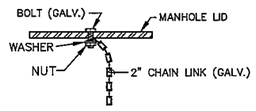
ELEVATION

SECTION C-C

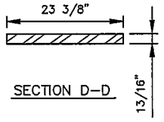
CENTER BEAM DETAIL FOR 20' INLET



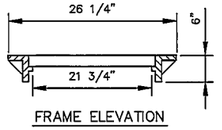
PLAN OF COVER



SECTION OF COVER



SECTION D-D



FRAME ELEVATION

INLET FRAME AND COVER

GENERAL NOTES:

1. THE FRAME SHALL BE BASS & HAYES NO. 226 (75 LBS.) AND THE COVER SHALL BE BASS & HAYES NO. 224 (80 LBS.) OR APPROVED EQUAL.
2. THE BACKFILL SHALL BE GRANULAR MATERIAL WITH A P.I. LESS THAN 10.
3. WOOD AND STEEL FORMS SHALL BE USED FOR THE INSIDE AND OUT CONSTRUCTION.
4. THE CONCRETE USED FOR ALL CURB INLET CONSTRUCTION SHALL BE CLASS "A" AT 3000 P.S.I. MINIMUM @ 28 DAYS.
5. ALL INLETS REQUIRED TO BE CAST IN PLACE NO PRECAST ALLOWED.

NOTES:

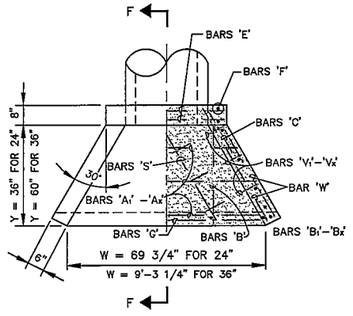
1. MANHOLE COVER SHALL BE BASS & HAYES NO. 224 (80 LBS.) OR APPROVED EQUAL.
2. MANHOLE FRAME SHALL BE BASS & HAYES NO. 226 (75 LBS.) OR APPROVED EQUAL.
3. THE MANHOLE COVER SHALL BE SECURED TO THE INSIDE WALL OF THE MANHOLE AND THE COVER WITH A 2" LINK GALVANIZED CHAIN, BOLT, WASHER AND NUT. THE CHAIN SHOULD BE LONG ENOUGH TO REMOVE COVER AND PROVIDE EASY ACCESS INTO THE MANHOLE.
4. THE WEIGHT OF ONE FRAME AND COVER SET IS 155 LBS.

STORM DRAIN DETAILS

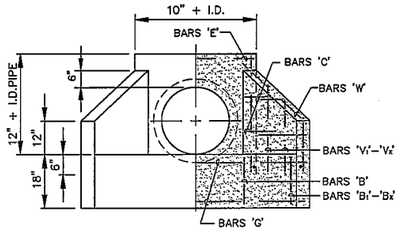
RECESS CURB INLET

CITY OF HURST TEXAS
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
1505 PRECINCT LINE ROAD
HURST, TEXAS 76054
817-788-7076

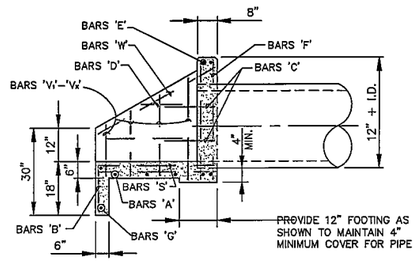
DESIGN	DRAWN	CHECKED	DATE	SCALE	REVISED	SHEET NO.
C.O.H.	R.O.	C.F.D.	NOV. 1998	N.T.S.	FEB. 2011	STD. DEETS SD-2 OF 4



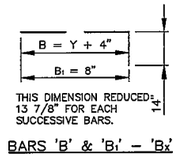
PLAN



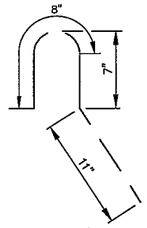
ELEVATION



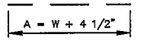
SECTION F–F



BARS 'B' & 'B₁' – 'Bx'



BARS 'C'



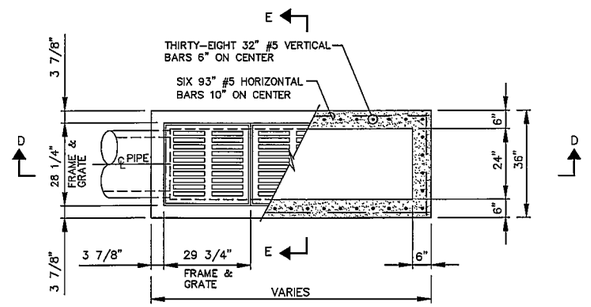
BARS 'A₁' – 'Ax'

BAR DESIGNATION	HEADWALL ON 24" PIPE					HEADWALL ON 36" PIPE				
	QUANITY OF BARS	SIZE OF BAR	SCHEDULE OF SPACING (INCHES O.C.)	AVERAGE LENGTH (INCH)	WEIGHT (LBS)	QUANITY OF BARS	SIZE OF BAR	SCHEDULE OF SPACING (INCHES O.C.)	AVERAGE LENGTH (INCH)	WEIGHT (LBS)
A_1 - A_X	3	#4	12	60	10	5	#4	12	88	25
B	3	#3	18	54	2	4	#3	18	78	10
B_1	2	#3	18	22	1	4	#3	18	37.5	5
C	4	#4	12	24	6	6	#4	12	24	8
D_1 - D_X	2	#3	12	12	1	4	#3	12	26	4
E	4	#5	4	38	13	4	#5	4	52	18
F	4	#4	4	39	9	4	#4	4	50	11
G	2	#3	15	74	5	2	#3	15	116	8
S	6	#4	12	36	12	6	#4	12	64	22
V_1 - V_X	8	#4	12	41	19	12	#4	12	47	32
W	2	#5	-	50	9	2	#5	-	80	14

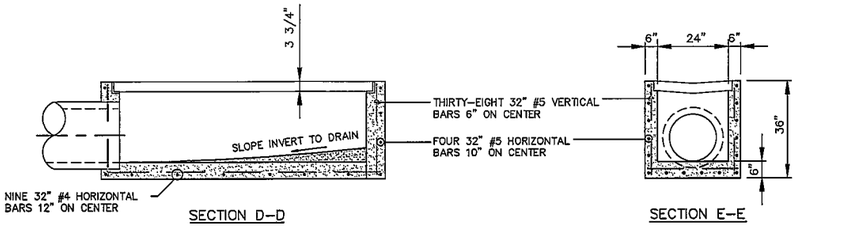
NOTES:
1. TYPE "B" HEADWALL ON 24" PIPE REQUIRES A TOTAL OF 0.81 C.Y. OF CLASS "A" CONC. AND 87 LBS. OF REINFORCING STEEL.
2. TYPE "B" HEADWALL ON 36" PIPE REQUIRES A TOTAL OF 1.61 C.Y. OF CLASS "A" CONC. AND 157 LBS OF REINFORCING STEEL.

REINFORCING STEEL SCHEDULE

TYPE "B" HEADWALL



PLAN

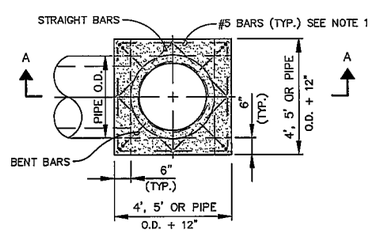


SECTION D–D

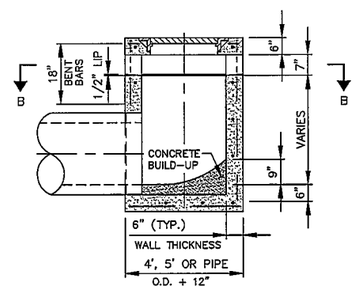
SECTION E–E

NOTE:
FRAME & GRATE SHALL BE PATTERN NO. 70, AS MANUFACTURED BY TRINITY VALLEY IRON & STEEL CO. OF FORT WORTH, TEXAS, OR APPROVED EQUAL.

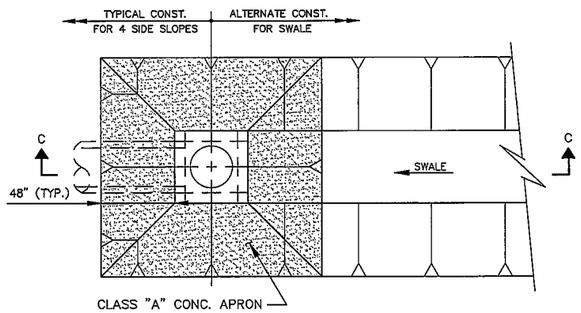
GRATE INLET



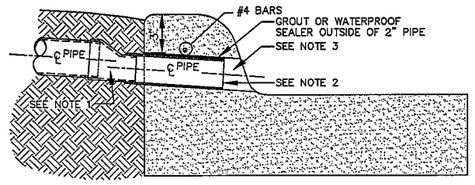
PLAN



SECTION A–A

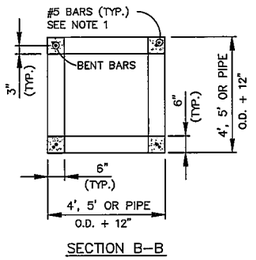


CONCRETE APRON PLAN



NOTES:
1. OFFSET REDUCER SHALL BE LAID SO THAT THE FLOW LINE IS CONTINUOUS. UPSTREAM PIPE SIZE VARIES.
2. LENGTH OF PIPE SHALL BE 10" MAXIMUM, BUT SHALL NOT EXTEND THROUGH THE FACE OF THE CURB. INSIDE DIAMETER OF PIPE SHALL BE 2".
3. BORE HOLE TO BE MADE FROM BACK OF CURB. BORE DIAMETER SHALL BE 2 1/4". SLOPE VARIES BUT EXIT BORE FLOW LINE MUST BE ABOVE FLOW LINE OF THE GUTTER.

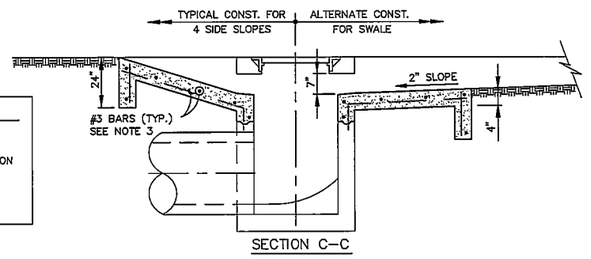
CURB DRAIN



SECTION B–B

NOTES:
1. ALL REINFORCING BARS FOR WYE INLET SHALL BE #5 BARS 12" ON CENTER BOTH WAYS, UNLESS OTHERWISE NOTED.
2. THE REINFORCING BARS FOR THE CONCRETE APRON SHALL BE #3 BARS 12" ON CENTER BOTH WAYS, UNLESS OTHERWISE NOTED.
3. THE FRAME & COVER FOR THE WYE INLET SHALL BE THE SAME AS THE ONE USED FOR THE STANDARD CURB INLET SEE DETAIL.

WYE INLET AND APRON



SECTION C–C

STORM DRAIN DETAILS						
HEADWALL AND GRATE INLET						
CITY OF HURST TEXAS	PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION 1505 PRECINCT LINE ROAD HURST, TEXAS 76054 817–788–7076					
DESIGN	DRAWN	CHECKED	DATE	SCALE	REVISED	SHEET NO.
C.O.H.	R.O.	C.F.D.	NOV. 1998	N.T.S.	FEB. 2011	STD. DEETS SD–3 OF 4

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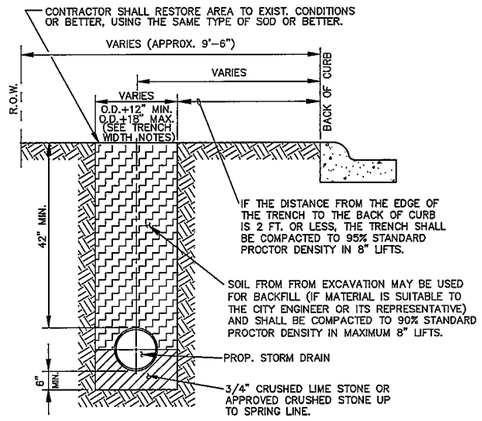
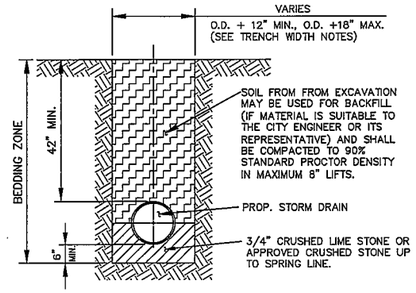
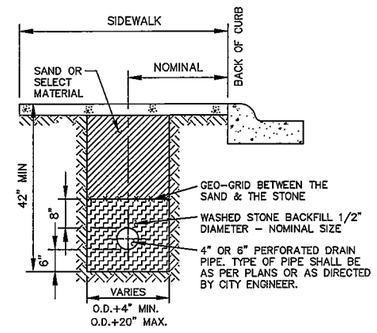


DITCH LINE BEHIND CURB



STORM DRAIN EMBEDMENT

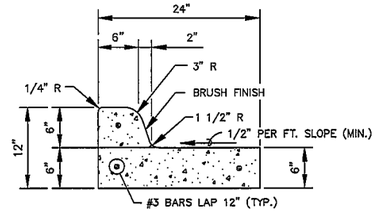


PIPE UNDERDRAIN SECTION

EXCAVATION NOTE:
WHEN THE TRENCH OR EXCAVATION EXCEEDS 5 FEET IN DEPTH THE CONTRACTOR SHALL MEET OR EXCEED THE O.S.H.A. STANDARDS FOR TRENCH SAFETY.

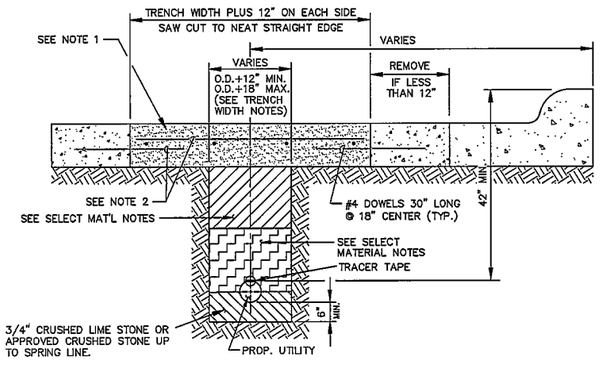
GENERAL NOTES:

1. MINIMUM COVER IS MEASURED FROM:
   A. TOP OF PAVEMENT ON UNIMPROVED STREETS WITH NO CURB.
   B. TOP OF CURB ON STREETS WITH CURB AND GUTTER.
2. THERE WILL BE NO OPEN CUTTING OF EXISTING PAVEMENT AND/OR CURB AND GUTTER THAT IS TO REMAIN IN PLACE WITHOUT THE PERMISSION OF THE CITY ENGINEER.
3. ACCESS TO ALL STREETS AND DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND/OR REPAIRS.



NOTE:
1/2" EXPANSION JOINTS AT 40' INTERVALS FOR FORMED CONCRETE CURB & GUTTER AND/OR 200' INTERVALS FOR MACHINE PLACED MONOLITHIC CONCRETE CURB & GUTTER.

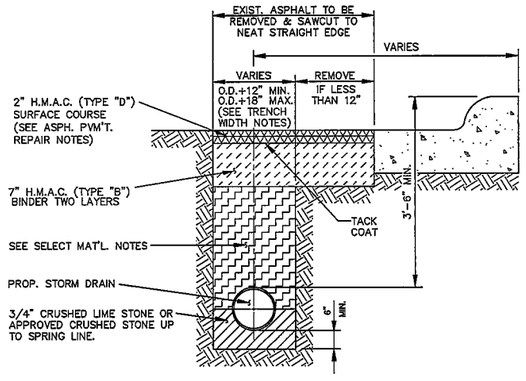
CONCRETE CURB AND GUTTER



NOTES:

1. REPLACEMENT SHALL HAVE A MINIMUM THICKNESS OF 6" OR THE SAME AS THE EXISTING PAVEMENT, WHICHEVER IS GREATER. CLASS "A" CONCRETE (3000 PSI @ 28 DAYS) SHALL BE USED.
2. ONLY NEW REINFORCED BARS ARE TO BE USED FOR STREET CUT REPAIRS. ALL REINFORCED SHALL HAVE WIRE TIES (100% TIE) AT EVERY INTERSECTION. #4 DOWELS WILL BE LAPPED WITH #4 REBARS AT 18" CENTERS BOTH WAYS. THE DOWELS WILL BE EPOXY GROUTED, 30" LONG AND BE DRILLED 15" DEEP IN TO THE EXISTING PAVEMENT AT 18" CENTERS.

REINFORCED CONCRETE STREET REPAIR SECTION



NOTES:

1. THE PRIMARY COLLECTOR AND ARTERIAL STREETS REQUIRE A 2" H.M.A.C. (TYPE "D") SURFACE COURSE AND A 7" H.M.A.C. (TYPE "B") BINDER COURSE IN TWO LAYERS.
2. ALL ASPHALT TO BE COMPACTED TO A MINIMUM OF 94% STANDARD LABORATORY DENSITY (THD BULLETIN C-14).
3. PAVEMENT REPAIR ON CONCRETE STREETS REQUIRE THAT THE TYPICAL SECTION TO BE APPROVED BY THE CITY ENGINEER.
4. THERE WILL BE NO OPEN CUTTING OF EXISTING PAVEMENT AND/OR CURB AND GUTTER FOR SERVICE LINES OR ANY OTHER PURPOSE WITHOUT THE EXPRESSED PERMISSION OF THE CITY ENGINEER.
5. ACCESS TO ALL STREETS AND DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND/OR REPAIRS.

ASPHALT STREET REPAIR SECTION

STORM DRAIN DETAILS

STREET REPAIR AND EMBEDMENT

PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
1505 PRECINCT LINE ROAD
HURST, TEXAS 76054
817-788-7076

DESIGN	DRAWN	CHECKED	DATE	SCALE	REVISED	SHEET NO.
C.O.H.	R.O.	C.F.D.	NOV. 1998	N.T.S.	FEB. 2011	STD. DEETS SD-4 OF 4

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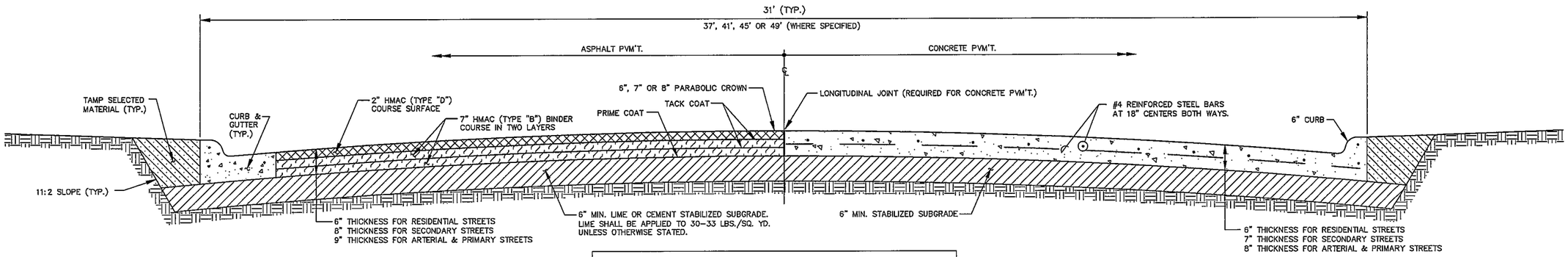
PAVING GENERAL NOTES:
1. CONSTRUCTION JOINTS SHALL BE PLACED AT 20' CENTERS.
2. EXPANSION JOINT SPACING SHALL NOT EXCEED 300'. THE PROPERLY SEALED EXPANSION JOINT SHALL BE PLACED AT ALL STREET INTERSECTIONS, BRIDGES AND/OR OTHER STRUCTURES.
3. A 30" LAP SHALL BE USED FOR ALL SPLICED REINFORCED BARS.
4. SIDEWALK OMITTED FOR CLARITY. SEE SIDEWALK DETAIL FOR ADDITIONAL INFORMATION.

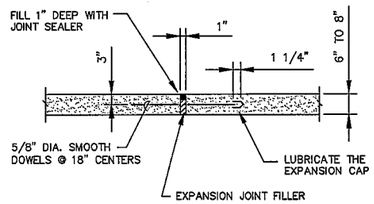


NOTES:
1. NO STREET SHALL BE DESIGNED AND/OR CONSTRUCTED TO A GRADE OF LESS THAN 0.50% SLOPE.
2. ALL BINDER COURSE SHALL BE PLACED IN 2" LIFTS. A TRACK COAT SHALL BE APPLIED BETWEEN LIFTS IF SUBSEQUENT LIFTS ARE NOT PLACED IN THE SAME DAY. EACH LIFT SHALL BE STAGGERED 3" LONGITUDINALLY.
3. ALL CONCRETE USED FOR STREET PAVING SHALL BE CLASS "A" 3,000 PSI @ 28 DAYS WITH A MINIMUM OF FIVE SACKS OF CEMENT PER CUBIC YARD OF CONCRETE.

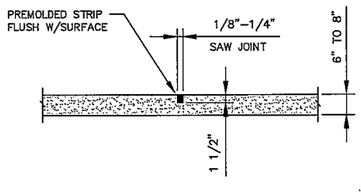
STREET CROSS SECTION

R.O.W. WIDTH	PVM'T. WIDTH	PVM'T. THICKNESS	CROWN HEIGHT	ORDINATES FOR PARABOLIC CROWN "X" FT.	"Y" FT.	"Y" IN.
60'	41' B-B	9"	7"	0	0.000	0
"	"	"	"	1	0.001	0
"	"	"	"	4	0.023	9/32
"	"	"	"	8	0.093	1 1/8
"	"	"	"	12	0.210	2 17/32
"	"	"	"	16	0.373	4 15/32
"	"	"	"	20	0.583	7
60'	37' B-B	8"	6"	0	0.000	0
"	"	"	"	1	0.002	1/32
"	"	"	"	4	0.025	5/16
"	"	"	"	8	0.090	1 3/16
"	"	"	"	12	0.222	2 21/32
"	"	"	"	16	0.395	4 3/4
"	"	"	"	18	0.500	6
50'	31' B-B	6"	6"	0	0.000	0
"	"	"	"	1	0.002	1/32
"	"	"	"	4	0.036	7/16
"	"	"	"	8	0.142	1 3/32
"	"	"	"	12	0.320	3 27/32
"	"	"	"	15	0.500	6

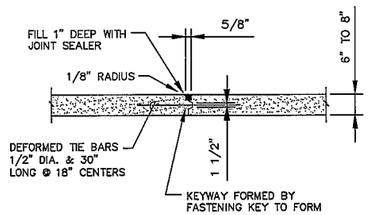
STREET DIMENSION TABLE



EXPANSION JOINT

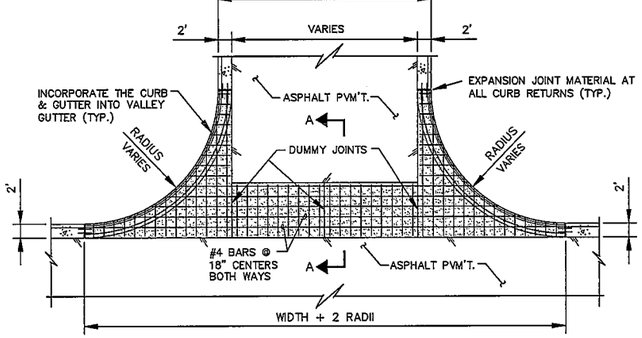


LONGITUDINAL OR TRANSVERSE JOINT

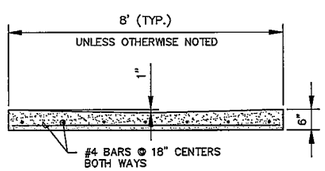


TIE TRANSVERSE

CONCRETE PAVING JOINTS



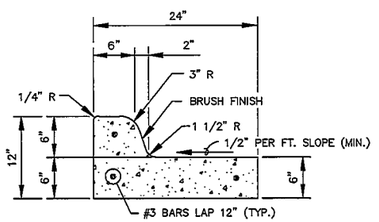
PLAN



SECTION A-A

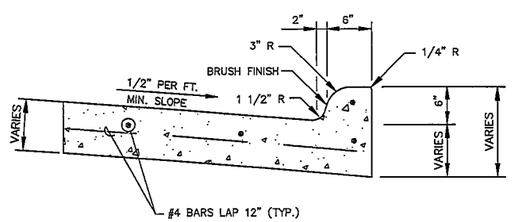
NOTE:
THE CONCRETE USED FOR VALLEY GUTTER SHALL BE CLASS "A" 3,000 PSI @ 28 DAYS WITH A MINIMUM OF FIVE SACKS OF CEMENT PER CUBIC YARD OF CONCRETE.

VALLEY GUTTER



NOTE:
1/2" EXPANSION JOINTS AT 40' INTERVALS FOR FORMED CONCRETE CURB & GUTTER AND/OR 200' INTERVALS FOR MACHINE PLACED MONOLITHIC CONCRETE CURB & GUTTER.

CONCRETE CURB AND GUTTER



MONOLITHIC CURB SECTION

PAVING DETAILS

STREET, CURB AND GUTTER

PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
1505 PRECINCT LINE ROAD
HURST, TEXAS 76054
817-788-7076

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C.O.H.	R.O.	C.F.D.	3-24 1999	N.T.S.	FEB. 2011	STD. DEETS P-1 OF 3

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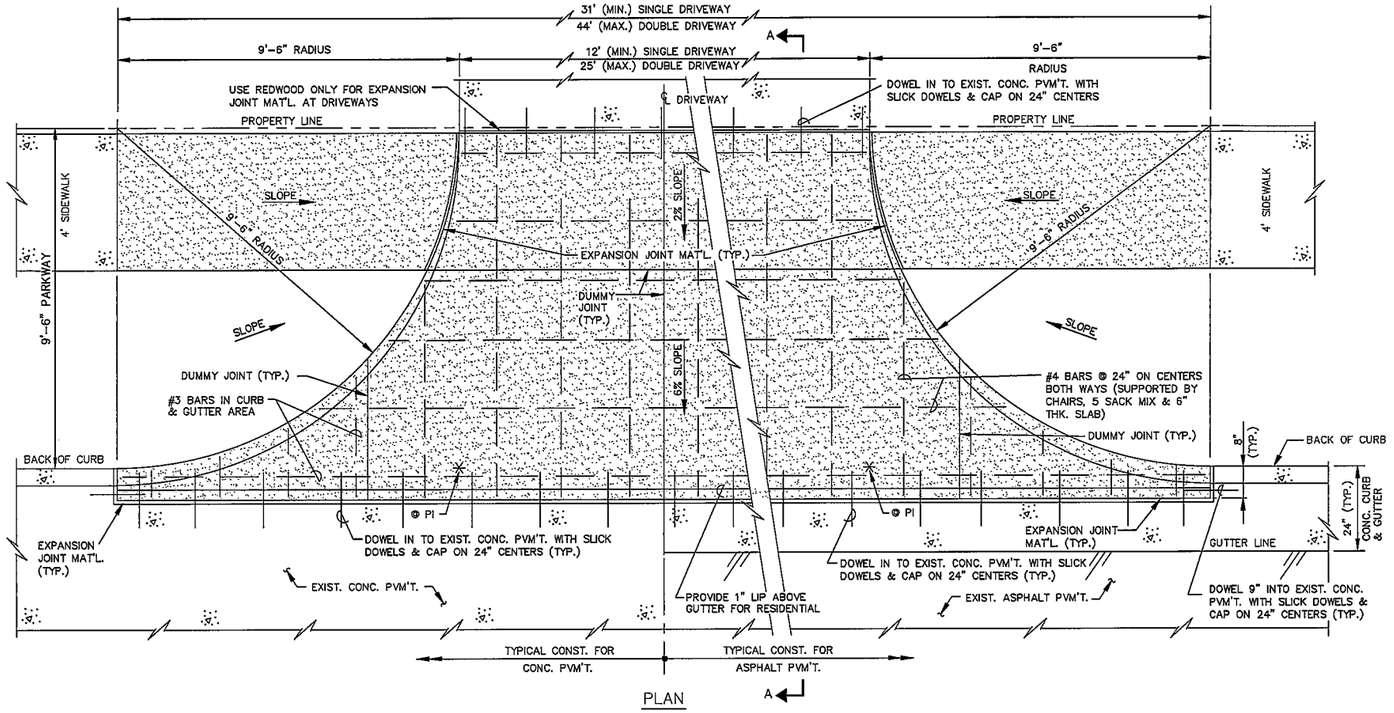
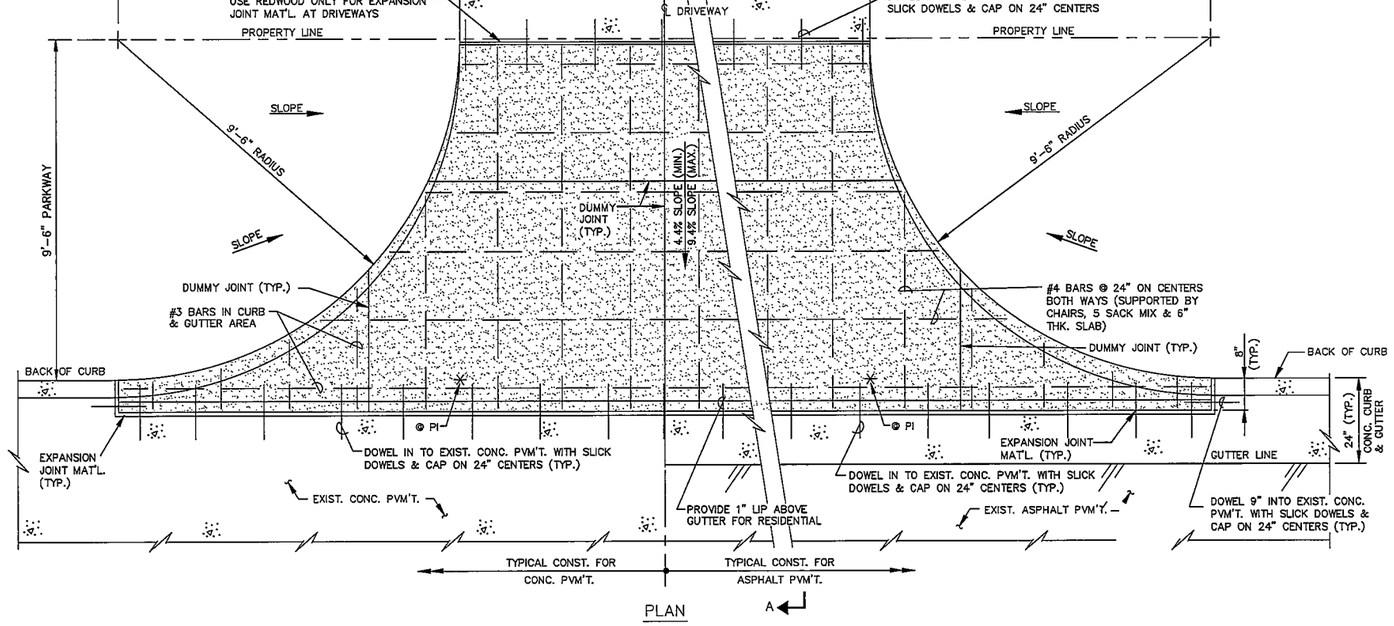


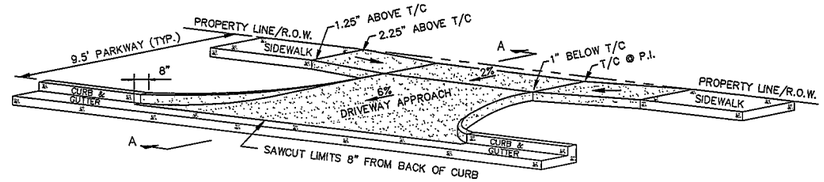
PLAN

RESIDENTIAL DRIVEWAY WITH SIDEWALKS

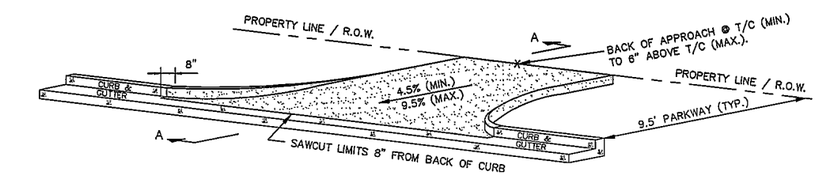


PLAN

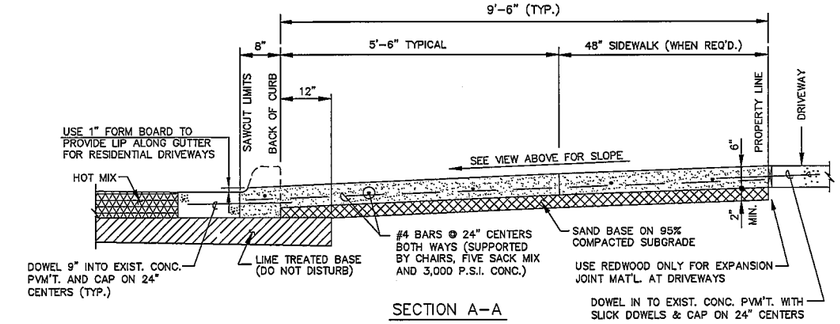
RESIDENTIAL DRIVEWAY WITHOUT SIDEWALKS



DRIVEWAY APPROACH VIEW
WITH SIDEWALKS



DRIVEWAY APPROACH VIEW
WITHOUT SIDEWALKS



SECTION A-A

GENERAL NOTES:

1. THE MAXIMUM GRADE CHANGE CANNOT EXCEED 8%.
2. A LIGHT BROOM FINISH SHALL BE REQUIRED ON ALL EXPOSED SURFACES.
3. ALL SAWCUTS MUST BE FULL DEPTH.
4. ALL DOWELS SHALL BE 18" LONG #4 SLICK BARS.
5. THE SLOPE OF THE SIDEWALK PORTION OF THE DRIVE APPROACH MUST BE 2% OR LESS.
6. ALL SIDEWALKS MUST BE BARRIER FREE AT THE DRIVEWAY PER THIS DETAIL. SEE SIDEWALK DETAILS FOR ADDITIONAL INFO.
7. COMPACTION TESTING REQUIRED PRIOR TO PLACING OF ANY REINFORCING STEEL.
8. ALL CONCRETE SHALL BE CLASS "A" 3000 PSI @ 28 DAYS WITH A MAXIMUM 3" SLUMP. AT THE CONTRACTORS REQUEST MATERIALS TESTING MAY BE USED IN LIEU OF THE 3" SLUMP REQUIREMENT.

PAVING DETAILS

RESIDENTIAL DRIVEWAY APPROACH

CITY OF HURST TEXAS

PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
1505 PRECINCT LINE ROAD
HURST, TEXAS 76054
817-788-7076

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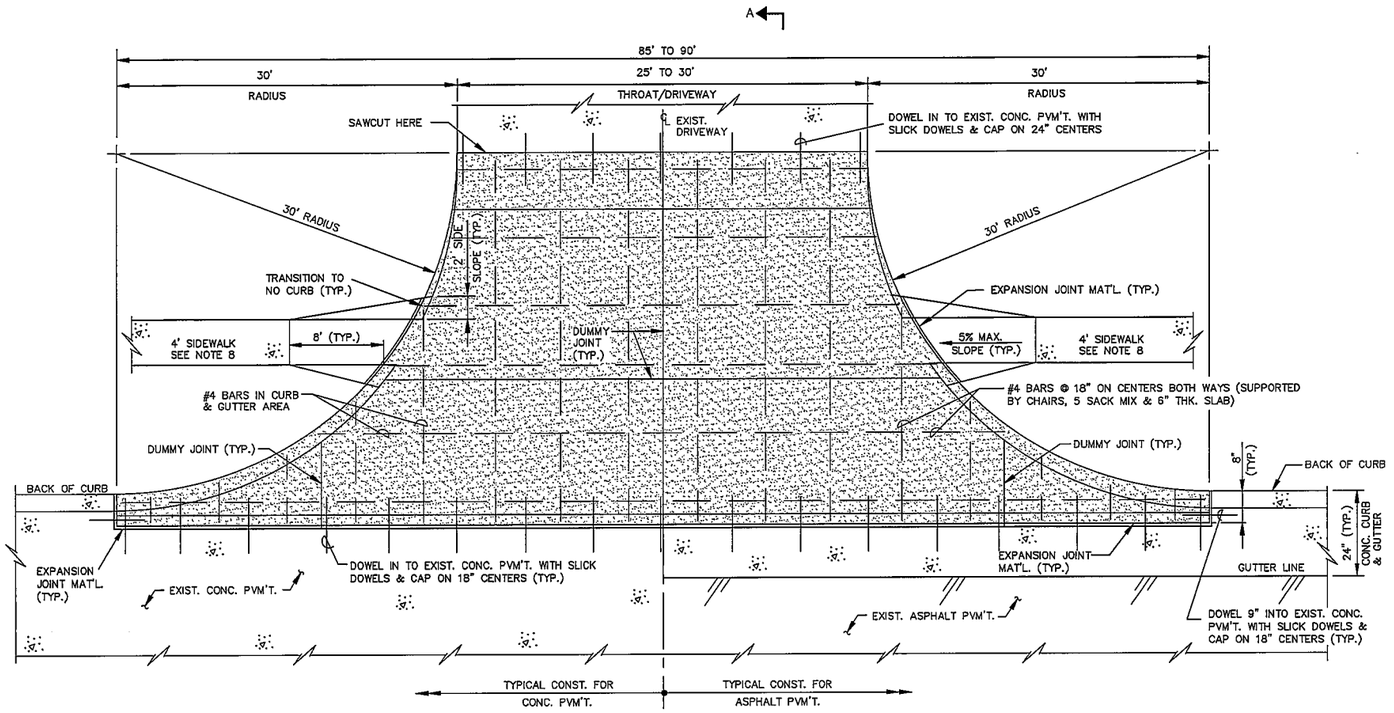
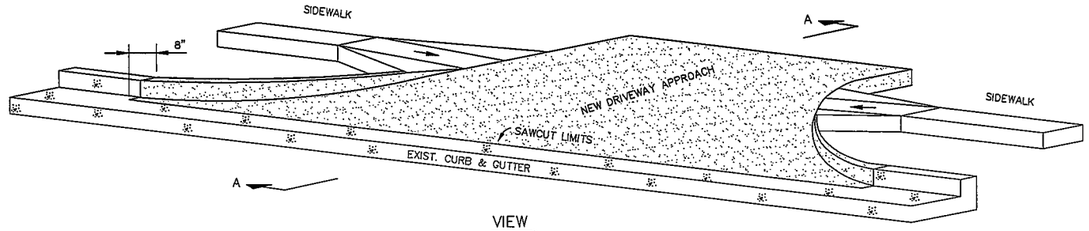


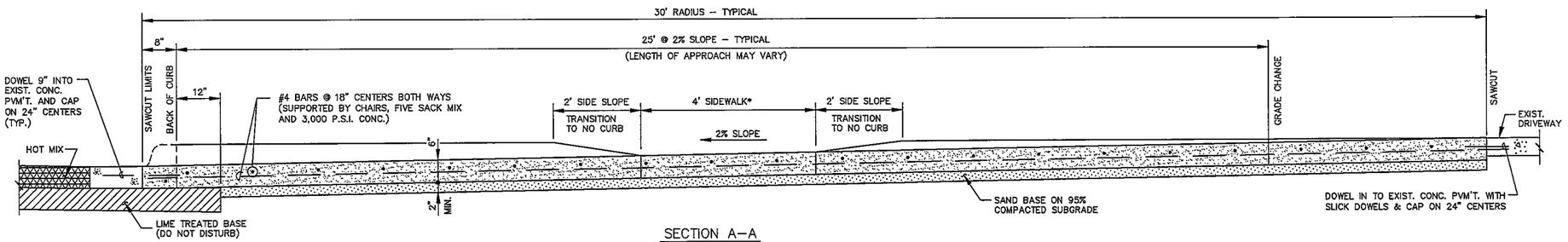
COMMERCIAL DRIVEWAY APPROACH

GENERAL NOTES:

1. THE MAXIMUM GRADE CHANGE CANNOT EXCEED 12% FOR EVERY 20' JOINT.
2. A LIGHT BROOM FINISH SHALL BE REQUIRED ON ALL EXPOSED SURFACES.
3. ALL SAWCUTS MUST BE FULL DEPTH.
4. ALL DOWELS SHALL BE 18" LONG #4 SLICK BARS.
5. THE SLOPE OF THE SIDEWALK PORTION OF THE DRIVE APPROACH MUST BE 2% OR LESS.
6. ALL SIDEWALKS MUST BE BARRIER FREE AT THE DRIVEWAY PER THIS DETAIL. SEE SIDEWALK DETAILS FOR ADDITIONAL INFO.
7. COMPACTION TESTING REQUIRED PRIOR TO PLACING OF ANY REINFORCING STEEL.
8. ALL CONCRETE SHALL BE CLASS "A" 3000 PSI @ 28 DAYS WITH A MAXIMUM 3" SLUMP AT THE CONTRACTORS REQUEST MATERIALS TESTING MAY BE USED IN LIEU OF THE 3" SLUMP REQUIREMENT.
9. ALL SIDEWALKS MUST BE BARRIER FREE AT DRIVEWAY APPROACH AS SHOWN. LOCATIONS OF SIDEWALKS ON THIS DETAIL ARE APPROXIMATE, SEE SITE OR DEVELOPMENT PLANS FOR ACTUAL LOCATIONS. SEE SIDEWALK DETAILS FOR ADDITIONAL INFORMATION.



VIEW



SECTION A–A

VARIABLE WIDTH DRIVEWAY WITH SIDEWALKS

PAVING DETAILS

COMMERCIAL DRIVEWAY APPROACH

PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
1505 PRECINCT LINE ROAD
HURST, TEXAS 76054
817–788–7076

DESIGN	DRAWN	CHECKED	DATE	SCALE	REVISED	SHEET NO.
C.O.H.	R.O.	C.F.D.	AUG. 2002	N.T.S.	FEB. 2011	STD. DEETS P–3 OF 3

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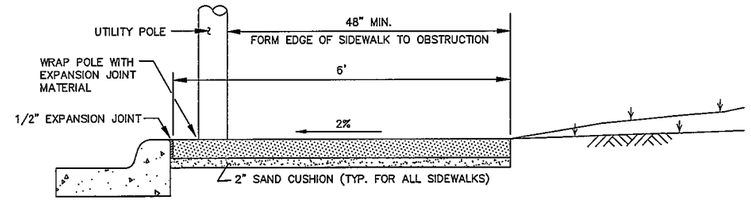
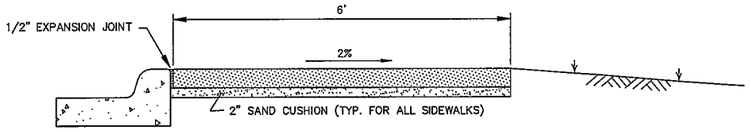


NORMAL & UPHILL SLOPE CONSTRUCTION

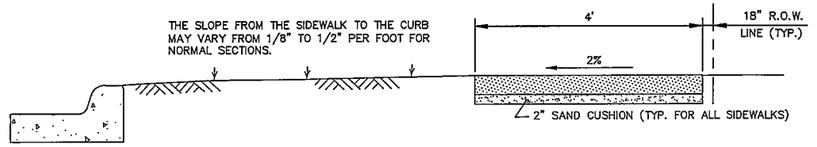


DOWNHILL SLOPE CONSTRUCTION

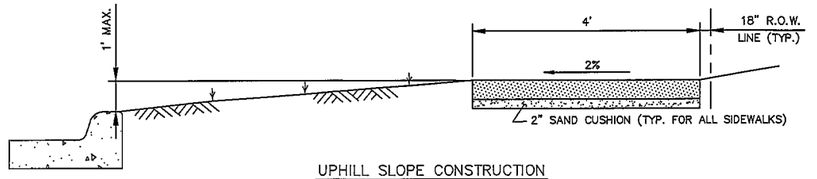
NOTE:

WHEN A SIDEWALK IS ADJACENT TO AN EXIST. CURB DOWEL IN TO THE CURB A MIN. OF 3" WITH 1/2" ANCHOR BOLTS OR #4 BARS ON 24" CENTERS.

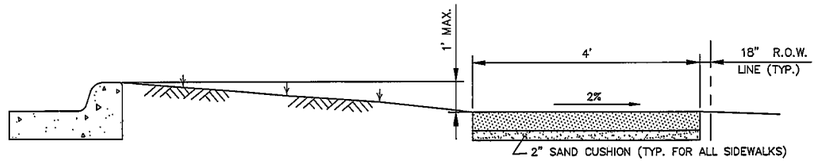
SIDEWALK CONSTRUCTION ADJACENT TO CURB



NORMAL CONSTRUCTION



UPHILL SLOPE CONSTRUCTION



DOWNHILL SLOPE CONSTRUCTION

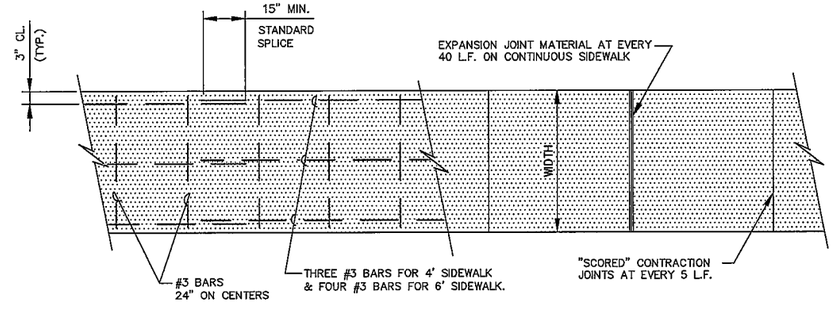
SIDEWALK CONSTRUCTION ADJACENT TO PROPERTY LINE

SPECIAL NOTE:

ALL SIDEWALK RAMPS AT STREET INTERSECTIONS MUST ADHERE TO TxDOT PEDESTRIAN FACILITIES REQUIREMENTS, PED-05 (SHEETS 1-4) ATTACHED.

SIDEWALK GENERAL NOTES:

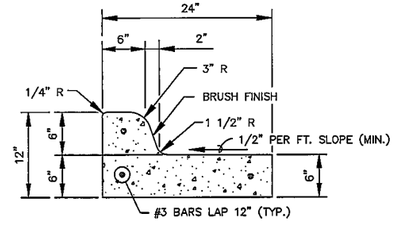
1. REMOVE ALL EXISTING TREES, BUSHES, AND/OR SHRUBS IN THE PATH OF THE SIDEWALK CONSTRUCTION. SPECIAL LANDSCAPE FEATURES TO BE REPLACED WHEN DETERMINED BY THE CITY ENGINEER.
2. ALL STANDARD SIDEWALKS CONSTRUCTION SHALL HAVE A MINIMUM THICKNESS OF 4" UNLESS OTHERWISED NOTED. WHEN SIDEWALKS ARE CONSTRUCTED THRU DRIVEWAYS THE MINIMUM THICKNESS IS 5". ALL EXPANSION JOINTS TO BE CONSTRUCTED AT EVERY 40', AT CURBS AND AT ALL DRIVEWAYS.
3. ALL CONSTRUCTION JOINTS SHALL BE PLACED AT 4' OR 5' INTERVALS ON 4' WIDE SIDEWALK AND AT EVERY 6' INTERVALS ON 6' SIDEWALKS.
4. THE RAMPS AND SIDEWALKS SHALL HAVE THE SAME REINFORCING STEEL.
5. A LIGHT BROOM FINISH SHALL BE REQUIRED ON ALL EXPOSED SURFACES.
6. RAMP LOCATIONS: RAMP LOCATIONS SHALL BE PROVIDED WHENEVER AN ACCESSIBLE ROUTE CROSSES A CURB.
7. MARK CROSSINGS: CURBED RAMPS AT MARKED CROSSINGS SHALL BE WHOLLY CONTAINED WITHIN MARKINGS, EXCLUDING ANY FLARED SIDES.
8. DETECTABLE WARNINGS: A CURB RAMP SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES.



NOTE:

THE CONCRETE TO BE USED FOR SIDEWALK SHALL BE CLASS "A" 3,000 P.S.I. @ 28 DAYS AND A MINIMUM OF FOUR (4) SACKS OF CEMENT PER CUBIC YARD OF CONCRETE. THE SLAB SHALL BE 4" IN THICKNESS.

SIDEWALK AND STEEL REINFORCING



NOTE:

1/2" EXPANSION JOINTS AT 40' INTERVALS FOR FORMED CONCRETE CURB & GUTTER AND/OR 200' INTERVALS FOR MACHINE PLACED MONOLITHIC CONCRETE CURB & GUTTER.

CONCRETE CURB AND GUTTER

SIDEWALK DETAILS

RAMP, SIDEWALK AND CURB

PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
1505 PRECINCT LINE ROAD
HURST, TEXAS 76054
817-788-7076

DESIGN	DRAWN	CHECKED	DATE	SCALE	REVISED	SHEET NO.
C.O.H.	RO/EP	C.F.D.	MAR. 1999	N.T.S.	AUG. 2014	STD. DEETS SW-1 OF 1

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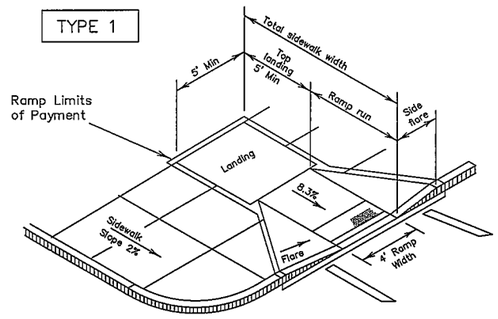
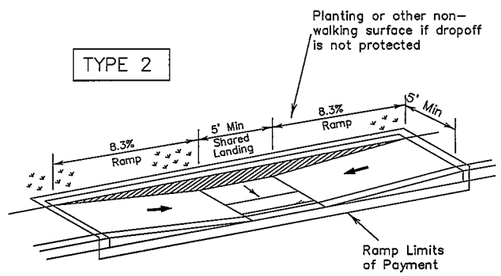
TYPE 1



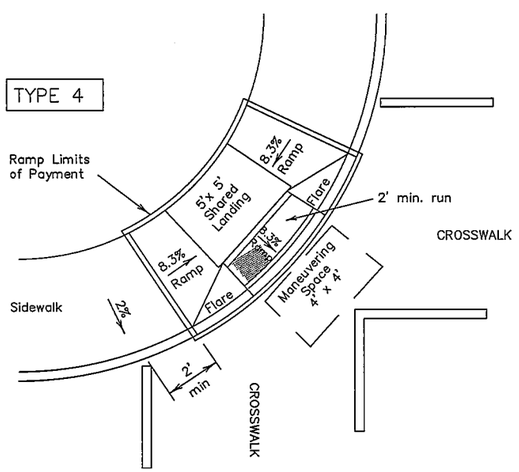
PERPENDICULAR CURB RAMP

TYPE 2



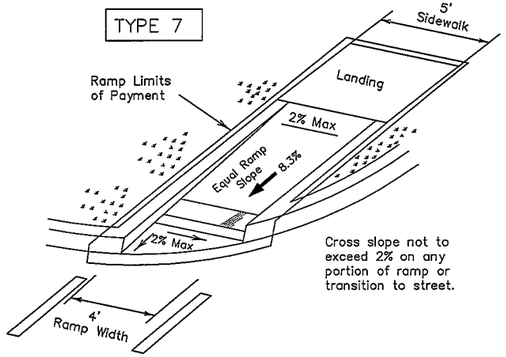
PARALLEL CURB RAMP
(Use only where water will not pond in the landing.)

TYPE 4



DIAGONAL COMBINATION CURB RAMP
Perpendicular to the Tangent of the Curb Radius and Contained in Crosswalk

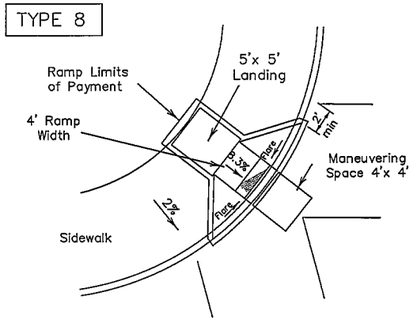
TYPE 7



Cross slope not to exceed 2% on any portion of ramp or transition to street.

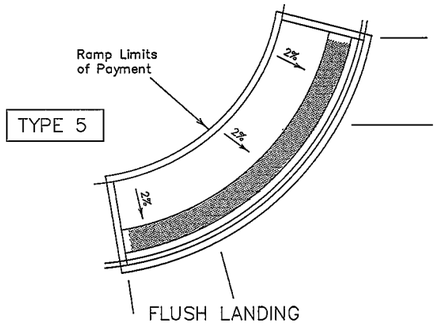
DIRECTIONAL RAMP WITHIN RADIUS
(Sidewalk set back from curb)

TYPE 8



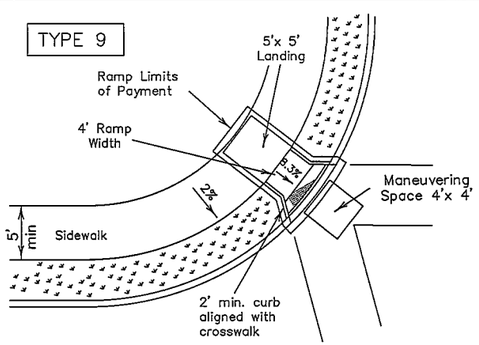
DIAGONAL CURB RAMP (FLARED SIDES)

TYPE 5



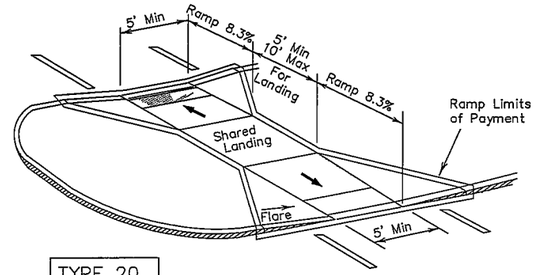
FLUSH LANDING

TYPE 9

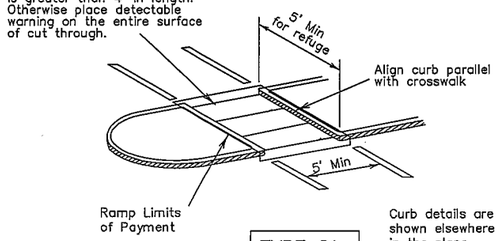


DIAGONAL CURB RAMP (RETURNED CURB)

TYPE 20



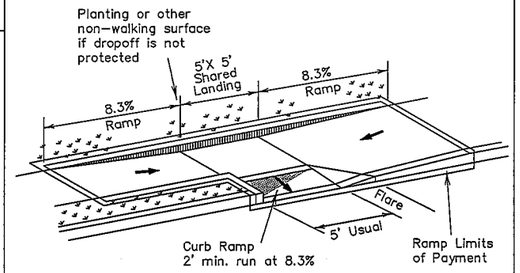
TYPE 21



Curb details are shown elsewhere in the plans.

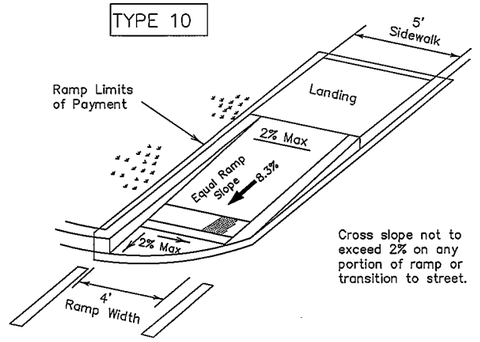
CURB RAMPS AT MEDIAN ISLANDS

Planting or other non-walking surface if dropoff is not protected



TYPE 3

TYPE 10

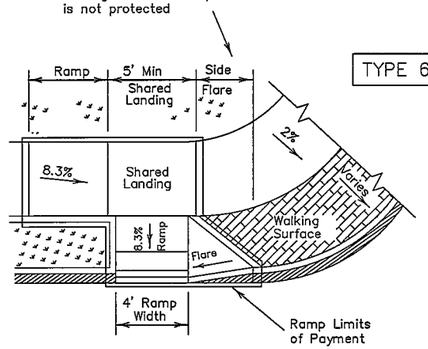


Cross slope not to exceed 2% on any portion of ramp or transition to street.

DIRECTIONAL RAMP WITHIN RADIUS
(Sidewalk adjacent to curb)

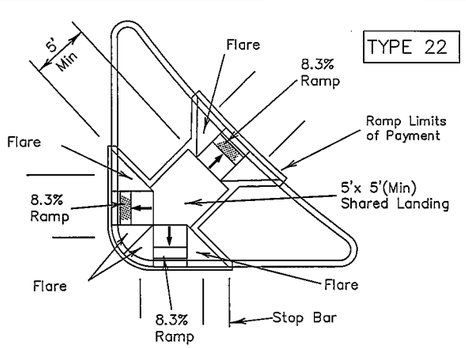
Planting or other non-walking surface if dropoff is not protected

TYPE 6



COMBINATION CURB RAMPS

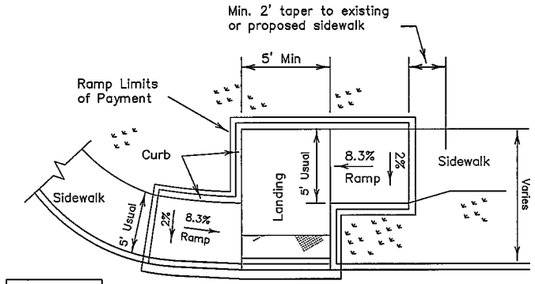
TYPE 22



COMBINATION ISLAND RAMPS

Min. 2' taper to existing or proposed sidewalk

TYPE 11



OFFSET PARALLEL CURB RAMP

NOTES:
See General Notes on sheet 2 of 4 for more information.

" " Denotes planting or non-walking surface.

PEDESTRIAN FACILITIES
CURB RAMPS
PED-05
TxDOT
DESIGN DIVISION (ROADWAY)

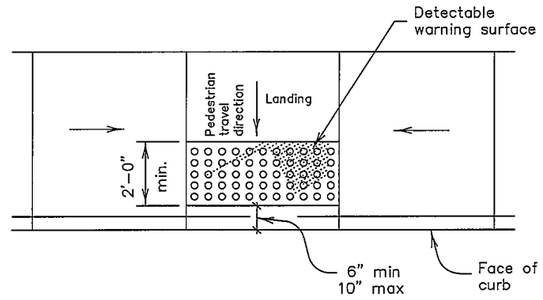
CITY OF HURST TEXAS
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
1505 PRECINCT LINE ROAD
HURST, TEXAS 76054
817-788-7076

DESIGN	DRAWN	CHECKED	DATE	SCALE	REVISED	CITY FILE NO.
TxDOT	TxDOT	TxDOT	MARCH 2002	– –	FEB. 2011	TxDOT 1-4

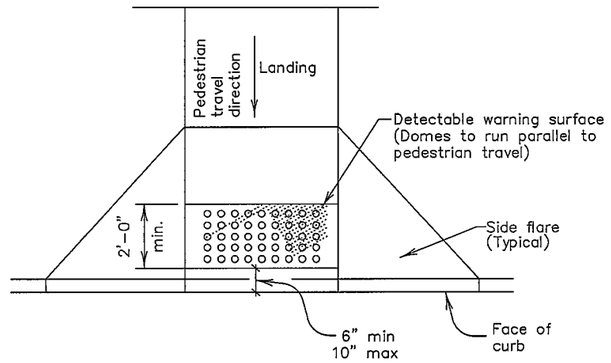
DETECTABLE WARNINGS

General Notes for Detectable Warnings

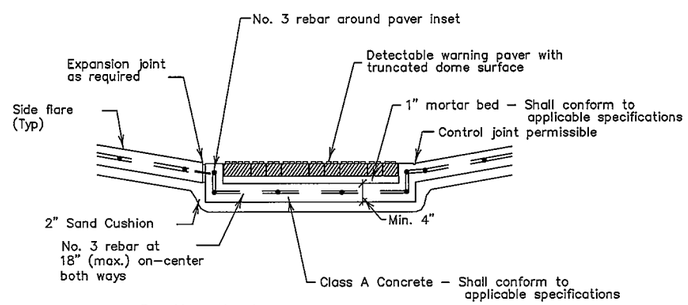
1. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with Section 4.29 of the Texas Accessibility Standards (TAS). The surface must contrast visually with adjoining surfaces, including side flares. Furnish dark brown or dark red detectable warning surface adjacent to uncolored concrete, unless specified elsewhere in the plans.
2. Detectable warning surfaces must be slip resistant and not allow water to accumulate.
3. Align truncated domes in the direction of pedestrian travel when entering the street.
4. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.
5. Detectable warning surfaces shall be a minimum of 24" in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
6. Detectable warning surfaces shall be located so that the edge nearest the curb line is a minimum of 6" and a maximum of 10" from the extension of the face of curb. Detectable warning surfaces may be curved along the corner radius.
7. TxDOT maintains a list of Qualified Detectable Warning Materials. Details are provided herein for the placement of landscape pavers. For other materials, refer to the manufacturer's product manual for proper installation.



Typical placement of detectable warning surface on landing at street edge.



Typical placement of detectable warning surface on sloping ramp run.

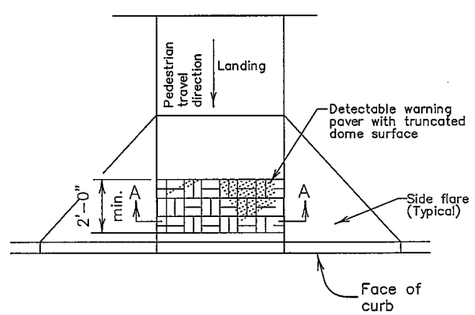


Section A–A

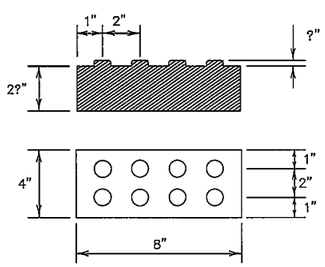
General Notes (Pavers)

Furnish detectable warning paver units meeting all requirements of ASTM C–936, C–33. Lay in a two by two unit basket weave pattern or as directed.

Lay full–size units first followed by closure units consisting of at least 25 percent of a full unit. Cut detectable warning paver units using a power saw.



Truncated Dome Pattern Curb Ramp



Detectable Warning Paver

DETECTABLE WARNING PAVER (OPTION)

Pedestrian Facilities General Notes

1. All slopes are maximum allowable. The least possible slope that will still drain properly should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
2. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is encouraged. Where a 5' sidewalk can not be provided due to site constraints, a minimum 3' sidewalk with 5'x 5' passing areas at intervals not to exceed 200' is required.
3. Landings shall be 5'x 5' minimum with a maximum 2% slope in any direction.
4. Maneuvering space at the bottom of curb ramps shall be a minimum of 4'x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
5. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
6. Curb ramps with returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planting or other non–walking surface or because the side approach is substantially obstructed. Otherwise, provide flared sides.
7. Additional information on curb ramp location, design, light reflective value and texture may be found in the current edition of the Texas Accessibility Standards (TAS) and 16 TAC 68.102.
8. To serve as a pedestrian refuge area, the median should be a minimum of 5' wide. Medians should be designed to provide accessible passage over or through them.
9. Small channelization islands, which do not provide a minimum 5'x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.
10. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall be aligned with theoretical crosswalks, or as directed by the Engineer.
11. Existing features that comply with TAS may remain in place unless otherwise shown on the plans.
12. Handrails are not required on curb ramps. Provide curb ramps wherever on accessible route crosses (penetrates) a curb.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Separate curb ramp and landings from adjacent sidewalk and any other elements with premold or board joint of ¼" unless otherwise directed by the Engineer.
15. Provide a smooth transition where the curb ramps connect to the street.
16. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
17. Flare slope shall not exceed 10% measured along curb line.

PEDESTRIAN FACILITIES
GEN. NOTES & DETECTABLE WARNINGS
PED–05
TxDOT
DESIGN DIVISION (ROADWAY)

PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
1505 PRECINCT LINE ROAD
HURST, TEXAS 76054
817–788–7076

DESIGN	DRAWN	CHECKED	DATE	SCALE	REVISED	CITY FILE NO.
TxDOT	TxDOT	TxDOT	MARCH 2002	– –	FEB. 2011	TxDOT 2–4

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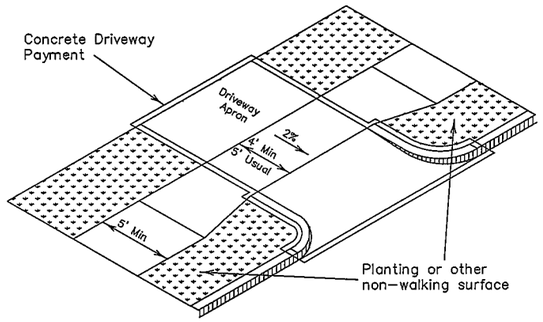
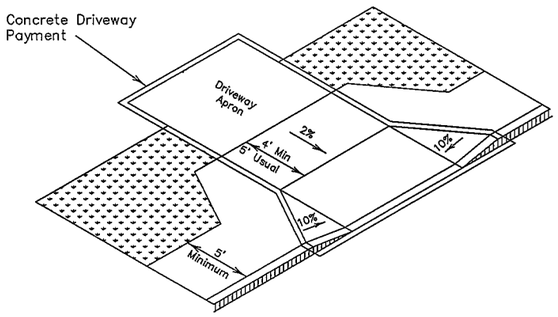
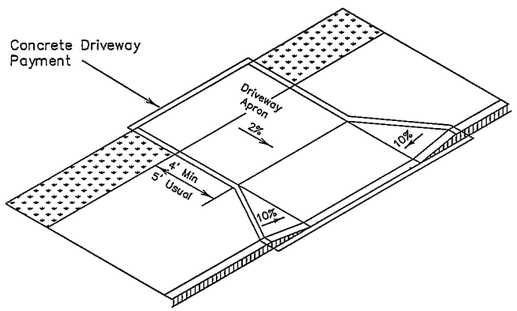


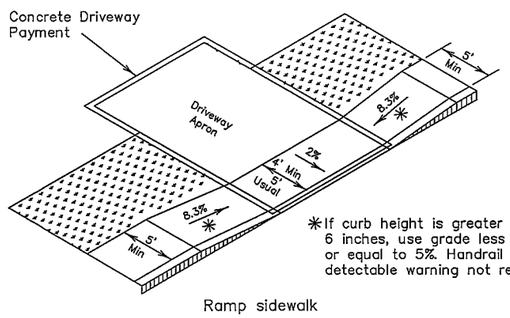
Setback sidewalk



Apron offset sidewalk



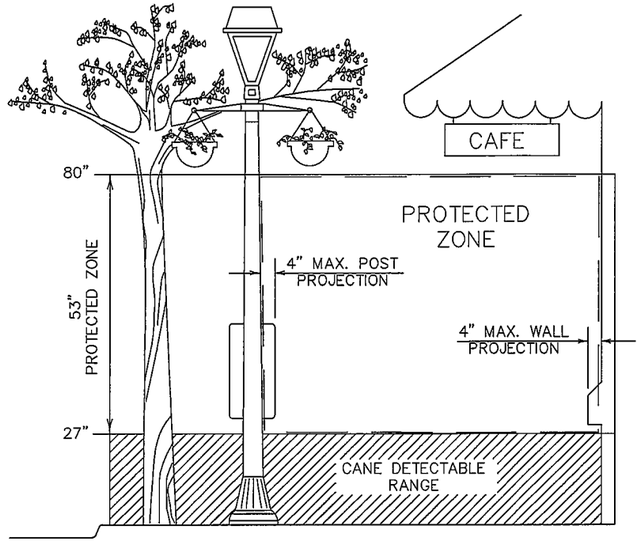
Wide sidewalk



*If curb height is greater than 6 inches, use grade less than or equal to 5%. Handrail and detectable warning not required.

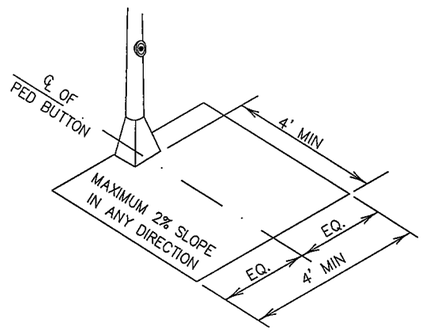
Ramp sidewalk

SIDEWALK TREATMENT AT DRIVEWAYS

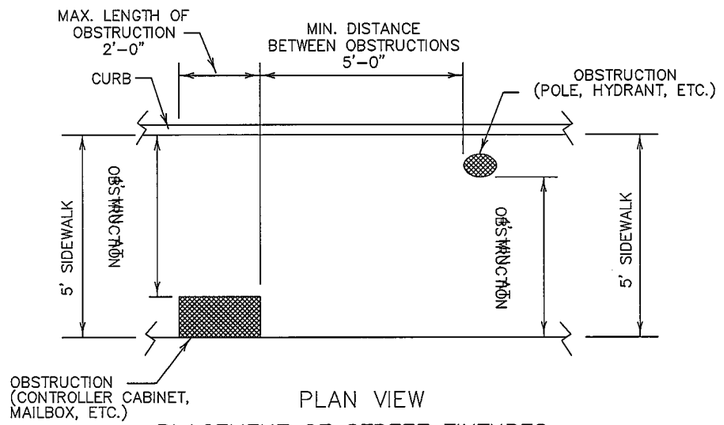


PROTECTED ZONE

In pedestrian circulation area, maximum 4" projection for post or wall mounted objects between 27"and 80" above the surface.



CLEAR GROUND SPACE CENTERED AT PEDESTRIAN PUSH BUTTON



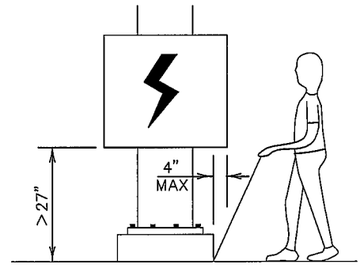
PLAN VIEW

PLACEMENT OF STREET FIXTURES

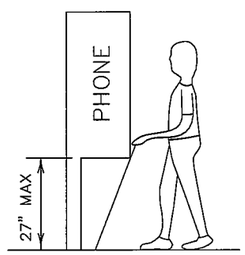
(ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' x 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.)

General Notes

1. All slopes are maximum allowable. The least possible slope that will still drain properly should be used.
2. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the accessible route or clear ground space.
3. Usual sidewalk cross slope equals 1.5%. The maximum allowable sidewalk cross slope equals 2%.
4. Street grades and cross slopes shall be as shown elsewhere in the plans.
5. Existing features that comply with TAS may remain in place unless otherwise shown on the plans.
6. Changes in level greater than ¼inch are not permitted.
7. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks, within the public right of way, may follow the grade of the parallel roadway. Where a continuous grade greater than 5% must be provided, handrails may be desirable on one or both sides of the sidewalk to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails must comply with TAS 4.8.5.
8. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
9. Driveways and turnouts shall be constructed and paid for in accordance with Item, "Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".
10. Sidewalk details are shown elsewhere in the plans.



When an obstruction of a height greater than 27" from the surface would create a protrusion of more than 4" into the pedestrian circulation area, construct additional curb or foundation at the bottom to provide a maximum 4" overhang.



Protruding objects of a height ≤27" are detectable by cane and do not require additional treatment.

DETECTION BARRIER FOR VERTICAL CLEARANCE <80"

PEDESTRIAN FACILITIES
SIDEWALKS
PED–05
TxDOT
DESIGN DIVISION (ROADWAY)

CITY OF HURST TEXAS
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
1505 PRECINCT LINE ROAD
HURST, TEXAS 76054
817–788–7076

DESIGN	DRAWN	CHECKED	DATE	SCALE	REVISED	CITY FILE NO.
TxDOT	TxDOT	TxDOT	MARCH 2002	– –	FEB. 2011	TxDOT 3–4

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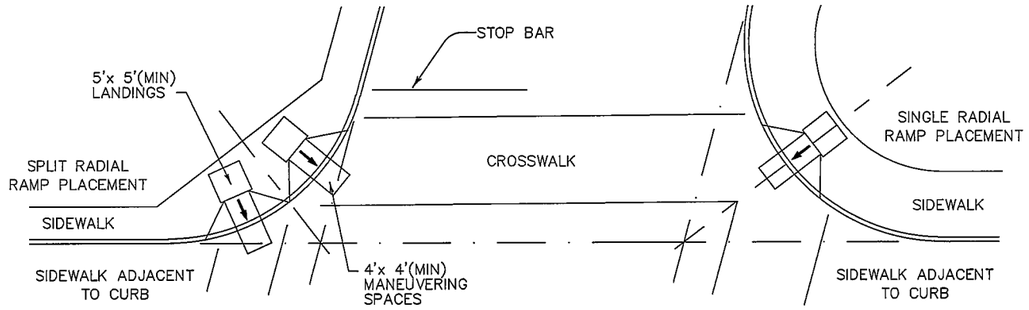
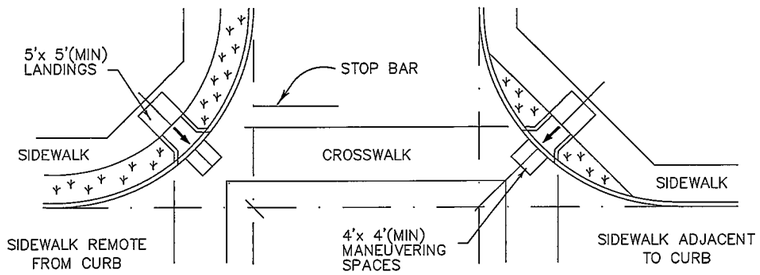


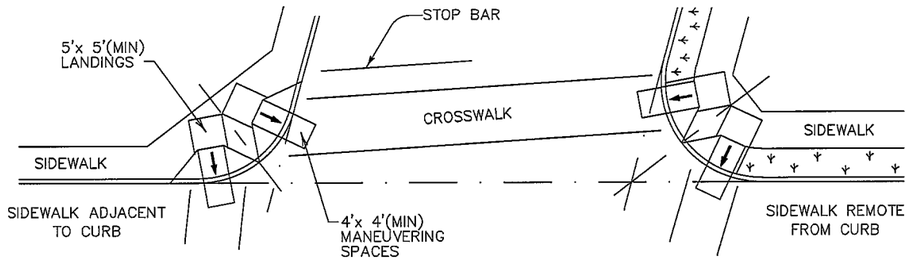
SKEWED INTERSECTION WITH "LARGE" RADIUS



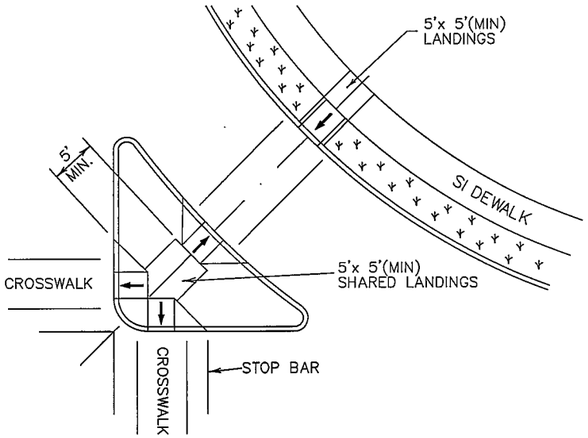
NORMAL INTERSECTION WITH "LARGE" RADIUS

General Notes

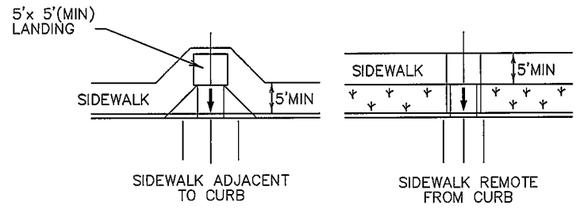
1. Street grades and cross slopes shall be as shown elsewhere in the plans.
2. Ramps are shown here without detectable warnings for simplicity. Detectable warnings are required at the locations shown on the PED Standard (Sheets 1 and 2 of 4) and in accordance with the details shown below.
3. Small channelization islands, which can not provide a minimum 5' x 5' landing at the top of ramps, shall be cut through level with the surface of the street.



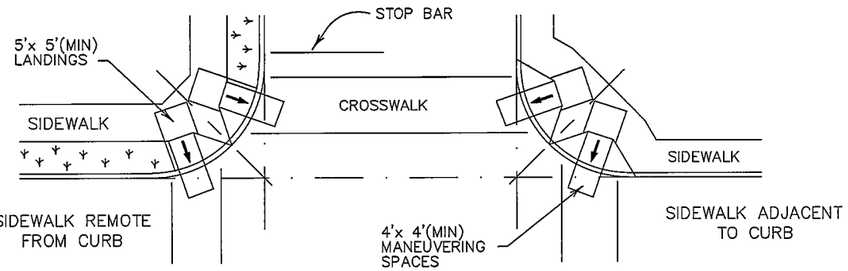
SKEWED INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION
W/FREE RIGHT TURN & ISLAND



MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS



NORMAL INTERSECTION WITH "SMALL" RADIUS

TYPICAL CROSSING LAYOUTS

SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS

PEDESTRIAN FACILITIES
INTERSECTION LAYOUTS
PED-05
TxDOT
DESIGN DIVISION (ROADWAY)

CITY OF HURST TEXAS

PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
1505 PRECINCT LINE ROAD
HURST, TEXAS 76054
817-788-7076

DESIGN	DRAWN	CHECKED	DATE	SCALE	REVISED	CITY FILE NO.
TxDOT	TxDOT	TxDOT	MARCH 2002	- -	FEB. 2011	TxDOT 4-4